GAS JOURNAL

LIGHT ⁘ HEAT ⁘ POWER ⁘ BYE-PRODUCTS

[Founded in 1849 as the "Journal of Gas Lighting."]

PROPRIETORS: WALTER KING, LIMITED — OFFICE: 11, BOLT COURT, FLEET ST., LONDON, E.C. 4.

Telephone: Central 6055. — Telegrams: "GASKING, FLEET, LONDON."

VOL. CLXXXIII. No. 3405.] WEDNESDAY, AUGUST 22, 1928. [80TH YEAR.

Editorial Notes.

The Reward of Virtue.

PARLIAMENT is in recess; and when our legislators meet again in early November, it will be for the final act of a drama remarkable in many ways. The prologue was the famous Zinovieff letter; the second act held all in tension with the General Strike; and the epilogue will in all probability be the victorious implementing of the Government's scheme of rating reform. Then the leading players and the chorus will doubtless turn their energies to a farewell eulogy of the plot and its presentation; and we shall hear once more of all that has been done for poor and for rich, for industry and agriculture. What will be claimed as the benefices bestowed upon coal and upon our heavy industries, it is difficult to foresee—so much may still emerge from within the industries themselves, as a result of marketing schemes, co-ordination, and rationalization; but at least the Government will claim that theirs were the suggestions which gave birth to the efforts. Certainly the industries concerned had their most pious blessing. Surely, however, the brightest plume in the Government cap, the proudest boast before a vacillating electorate, will be that during their administration the spoilt child of every political party reached adolescence, and was endowed with millions and sent forth to work incalculable benefit in every home, factory, and farm.

Looking back, now that the fourth scheme (that for North-West England) under the Electricity Supply Act of 1926 has reached the hands of the Central Board, we may perhaps pardon the encomiums which our leading statesmen heaped upon electricity when the grandiose scheme of generation and transmission was first formulated. After all, a measure which was to cost upwards of 33 millions sterling and revolutionize an industry, in return for nebulous benefits which some of the best brains in the electricity industry cannot envisage, required no ordinary bolstering-up. However, the gas industry's leading competitor having obtained its Magna Charta, it is not easy to understand why it should still be the favoured recipient of continual boosting from high, and we had always hoped impartial, places. Yet—"when we come to be judged of our actions, I think people will declare that one of the most far-reaching reforms carried out in this Parliament was our great Act dealing with electricity. We have tried to expand the public supply of electricity. . . ." Thus the Prime Minister, before a vast audience at Bramham Hall a month ago.

Meanwhile, what of the industry of gas supply, which its own leaders and administrators have tried to expand, and with magnificent success? Has that success had its tribute in the House or the constituencies? Has the national work of the gas industry ever had public recognition from the mouth of a Cabinet Minister? The gas industry has not demanded a cry from the housetops of Downing Street, valuable though such propaganda might be; but it has put its own house in order, made its paths straight, and has now for some time been awaiting the encouragement it deserves and the charter which is its due. In the spring of 1926 the National Gas Council decided to promote certain legislation which should free the industry from antiquated and inequitable fetters, and enable it to expand along lines which modern opinion knew to be best for the industry and for the country as a whole. Commenting upon the proposal at the time, we said:

> Cause and opportunity combine. The Government have shown their desire to help industries to place themselves in better position to assist in national provision and development. We see the desire—the methods need not be discussed here—in what has been done in connection with the railway services, the proposals for the electricity industry, and the willingness of the Government to legislate for the development of the coal industry. We believe, however, the Government would far sooner see schemes for the purposes in view emanate from within an industry than that it should go jogging along in the old traditional way, and show little innate inventiveness in respect of its own necessities. In what is seen of parliamentary tendency and action, there is found an excellent opportunity for the gas industry putting forward certain claims which will assist development in public service, and provide the greater security and facilities that are required.

The opportunity was the avowed willingness of the Government to help those industries that helped themselves; but since that Editorial was written, two years have passed away, electricity and coal and many others have received largesse from the helping and lavish hand, the while the gas industry's proposals, which ask no favour beyond a square deal, have languished in the form of the original draft. It should be noted that hardly a word has been said against the draft. The Board of Trade found a true bill; the expected opponents discovered no hare to start; the National Fuel and Power Committee were, we feel sure, grateful for an insight into the affairs of a live and magnificently organized industry. But despite the efforts of the National Gas Council, despite the oft-repeated plea of extreme urgency, the original interest which was aroused in official circles seems to have died away; and to the best of our knowledge the Board of Trade are not pressing for the report of the National Fuel and Power Committee. Worst of all, the Government have refused to promise consideration of the legislation at the beginning of the next session, pleading the extent of other business. Does this mean that the Government's placid detachment from our affairs, in such sorry contrast to their virile interest in our competitors, is to drag on until the curtain falls on their activities?

Dual Service at Cookstown.

WHAT in most places is an ideal—the manufacture of gas and electricity at one source, and under the same management—has been accomplished at Cookstown, though there seems little chance at present that the idea will spread. But the present is from the philosophical aspect merely a change from past to future; it is, in fact, as nebulous as the future. Notions of to-day can only remain true if there is virtue in them; and it is by no means certain that the current notion that electricity and gas are purely competitive will live. Mr. W. Millar, of Cookstown, in his Presidential Address before the Irish Association of Gas Managers on Aug. 14, stated that "Cookstown was far too small to have rival concerns doing their best to cut each other out, while . . . neither would be likely to give good service to the consumers." The general experience has been that electrical competition has, by spurring the gas undertaking to greater effort, and engendering renewed vigour, increased gas sales. And, at the same time, electricity has developed. If Mr. Millar undertook the generation of electrical current simply because of fear of the effect of competition on gas sales, what is going to happen to the rural gas-works in Great Britain when the electrical grid is complete, and is tracing its way through cornfields? We believe, however, in the well-worn, nevertheless proved, statement that "there is room for both gas and electricity." Otherwise we should exist in Stygian gloom, for the world will undoubtedly have electricity; in certain directions this form of energy is supreme. But we are wholeheartedly enthusiastic concerning the merits—entirely apart from the question of cost—of gas for the heavier fuel requirements not only of the householder, but of the public authority and the industrialist. For all manner of duties gas "fills the bill" better than electricity can, and any suggestion that a gas undertaking has reached its saturation point is merely indicative that the particular undertaking lacks imagination and driving force. In his case, however, Mr. Millar has undoubtedly tackled the situation with which he was confronted with courage and skill, and has afforded the community he serves better facilities than could have been achieved otherwise; and we know that, far from regarding his new enterprise as an "electric end," he will work it as an "electric service," realizing that by so doing he has nothing to lose. "Room for both," it may be argued, is all very well for an urban district; it is not so applicable to a little country concern having a gas output of about 10 millions a year. Surely, however, the spending power of this small community cannot compare with that of a large urban area; and there is no doubt that for most domestic requirements electricity, from the economic point of view, as well as from the value-for-money aspect, cannot hold a candle to gas. Moreover, the outline which Mr. Millar gives of the manner in which he is manufacturing gas shows that the Cookstown consumers are getting a really excellent supply, and owe their thanks to him not only for fulfilling their domestic needs, but for coping so satisfactorily with public lighting in the district. It is an address affording still further evidence that, taking all circumstances into consideration, a small works can be run as efficiently as a much larger concern.

Industrial Gas Engineering.

THE public lighting load of the gas industry is being retained, in spite of strenuous and sometimes favoured competition. At present, out of 670,000 public lamps in Great Britain and Ireland, 585,600, or 87 p.ct., are gas, and 84,700, or 13 p.ct., are electric; and an analysis of the number of gas and electric lamps in thirteen cities and towns where the local authorities own both gas and electricity undertakings reveals that only one street lamp out of every twenty-three is electric. Consideration of the domestic lighting load, it is true, does not show the same happy state of affairs; but there is not the slightest doubt that past inattention on the part of certain gas suppliers is to a large extent responsible for what has taken, and is taking, place. In the fields of domestic and industrial heating, however, the gas industry has unlimited scope. Already there has been an astonishing reversal of the relative importance of the lighting load and the heating load. The development of the latter has been so enormous during recent years that one can well appreciate that it may give rise to a tendency towards self-congratulation and a too bland satisfaction. Bearing in mind the excellent growth of the industrial load of the industry, it is still essential to ask whether all is being done to encourage industrialists to adopt gas in their various processes—whether, in view of the advantages of gas, the increase in its application to industrial propositions is wholly satisfactory. It is of no avail to-day to interview a prospective industrial consumer, and explain to him that "If it's heat you want, it's gas you want." He very rightly arrives at the conclusion that, if this is how the industry approaches its sales problems, it must be run by romantic schoolboys. This, of course, is a gross exaggeration of the condition of affairs as they actually exist; but can it be said with honesty that the gas industry is approaching the industrial heating load in the right spirit? Does the average gas interviewer put his case in such a way that the industrialist becomes convinced that gas spells economy to him? In general, does the latter invariably realize that the industry, through its representatives, knows what gas can do, and exactly how it ought to be applied? In other words, has he complete faith in the gas advocate's commercial sense and particular engineering ability? The answer to these questions is to be found in the adoption and retention of, or the refusal to adopt, gas. Emphasis must be laid on retention of gas, for a single failure—caused, perhaps, by incomplete study of a problem, and over-optimistic statements—brings gas into bad odour among the unfortunate manufacturer's friends. In this respect the industrial load does not differ from the domestic; the loss of a furnace, however, means more to a gas undertaking than the loss of a cooker or fire.

Information Bureaux.

MR. G. W. ALLEN, of Toronto, read a paper on "Experiences in Industrial Gas Survey Engineering" before the Canadian Gas Association, and a lengthy extract of his communication will be found in later columns of our issue to-day. Speaking of conditions in Canada, he observes that, in those areas where little attention has been paid to the industrial gas load, industrialists lack confidence in the ability of a gas undertaking's representatives to understand their particular heating problems; and he points to the harm which this feeling of uncertainty does the gas industry. How is this confidence to be engendered? Mr. Allen suggests a remedy in the inauguration of industrial fuel information bureaux—some system which will keep gas managers thoroughly acquainted with all the possibilities of gas application in their respective areas, and will enable them to approach any problem with sufficient data to accomplish a sale by indicating to the potential consumer how gas will increase his profits. The compilation of this information implies an engineering vision beyond the mere calculation of gas rates in comparison with the costs of competitive fuels. It means knowledge of the process in which it is intended that gas shall be used, and thorough understanding of the best gas equipment to employ. In the first place, a preliminary survey of every potential outlet for gas should be made. Mr. Allen has recently been in contact with nearly 700 industrial and commercial firms in a certain area, and almost 90 p.ct. were willing to try gas, if the gas undertakings concerned could prove to them that its application would increase profits. Then came the trouble—some local undertakings could not follow up the business, because they had no trained men available. Would this be the case following a complete survey in England? If so, the remedy is obvious, for the industrial load offers such marvellous possibilities. These possibilities are not confined to increased industrial sales. They include development of domestic sales; for it will be found that the highest gas rates prevail in those places where the ratio of domestic to industrial consumption is greatest. Industrial gas engineering as a distinct phase of the industry's activities is bound to come; and Mr. Allen's paper may reveal how the work can be organized in the preliminary stages. His suggestion regarding industrial fuel information bureaux is of great interest in this direction.

Translating Aims into Practice.

To revert for a moment to the question of gas lighting, we agree with Mr. W. M. Mason—whose address on the work of the "B.C.G.A." before the Irish Board of the National Gas Council will be found later in this issue of the "JOURNAL"—that this load will not be retained merely by the British Commercial Gas Association or anybody else telling the public that gas is supreme for the purpose. A householder who has experience of gas lighting in a district where the supply undertaking has taken no measures to see that his installation is functioning properly can only regard advertisement of "soft, restful, glareless gas lighting" in a spirit of irony. Nor does the matter end there. He is led to believe that other public statements of the industry on the cooking, heating, and industrial applications of gas are equally empty. There are districts in this country where the domestic lighting load still forms a healthy proportion of the total gas output, and in every case it will be found that this is due to well-organized maintenance schemes backed up by equally efficient manufacturing and distribution practice. Fluctuations in gas pressure and B.Th.U. content are, of course, seriously detrimental to the satisfactory working of cooking and heating appliances, but they are much more apparent when it comes to lighting burners; and the latter, too, require nicer adjustment and more frequent attention. It seems that some of those responsible for the administration of gas undertakings expect too much of the "B.C.G.A.;" they imagine that because they have subscribed what is in reality a very small amount to this organization, their work is ended and their burdens are automatically dissolved. Actually, the work of the "B.C.G.A." will for a long time to come make the tasks of every gas undertaking in the land very much more onerous. Advertisements in the national and the local Press have aroused the public interest in a thousand-and-one ways. Gas undertakings, as a natural consequence, are receiving more inquiries, and the public are requiring practical demonstration of the "gas service" about which they read so much. This, far from rendering the work of gas suppliers more comfortable, is of necessity imposing new obligations; and it is absolutely essential for the welfare of the entire industry that these should be carried out to the letter. What, however, would have happened during the past fifteen years if there had been no organization to present to the public what purports to be the view of every gas undertaking, be it large or small? Would there have been the same development in gas sales, the same increase in enthusiasm to translate the "service" aim into practice? Would the few—the very few—concerns which have not yet brought genuine enthusiasm to bear upon their sales work be enjoying their seeming security against the inroads of an efficient competitor? And this security, let it be said at once, will crumble unless service methods are adopted. It is precisely those concerns that have "let well alone" which will suffer most when electricity becomes available—as is certain—in their areas of supply.

The Price Question.

FROM the price point of view, there can be little trepidation regarding the electrical grid. The more the matter is studied, the greater becomes the conviction that the distribution costs of electricity under the Government scheme will be so enormous as practically to offset the decreased costs of manufacture which, at present representing only a small proportion of the cost of the unit to the customer, will bear a still smaller relationship in the future. What must be considered, however, is that electricity will eventually be universally available throughout the country. An efficiency equivalent to that in our large towns and cities will operate in every small village; and finally the competition between gas and electricity will be based not so much on relative costs as on relative service. No one outside either industry is concerned whether or not he uses gas or electricity. Everyone is, on the other hand, vitally interested on what value he gets for his money; and the conditions of life have so changed that, if he has to pay more for a better service, he will most assuredly do so willingly. While, as Mr. Mason points out—and with which observation there will be general agreement—it is necessary for the gas industry to do everything possible to get and maintain a low price, this must not become an obsession. The fundamental aim of the industry should be to make sure that the consumer obtains value for money—a service which, at the same or even a slightly higher cost, could not be offered by any other heating or lighting agent. The future of our industry rests on this. The British Commercial Gas Association are telling a story to the public; and they are doing so in an admirable fashion. This story is a true one; but its truth can only be appreciated by the public if the undertakings are possessed of the machinery to translate service talk into service action. Mr. Mason entitled his address "What is the 'B.C.G.A.' Doing?" An equally appropriate, though a longer, title would be: "What, with the funds available, is the 'B.C.G.A.' not doing for the industry?" Frankly, we cannot answer the latter question; though we could fill more than this issue of the "JOURNAL" in answering the former query.

Low Gas Price at Hornsey.

This is by no means the first time we have congratulated the Hornsey Gas Company on the low rate at which they supply their consumers with gas. The Company now announce a retrospective reduction of ½d. per therm, bringing the charge to 7½d. per therm, to date from the reading of the meters for the midsummer quarter. This, we believe, will make Hornsey's gas the cheapest in Greater London; the Wandsworth, Wimbledon, and Epsom District Gas Company being a close second with 7·6d. per therm.

Coal Carbonized at Coke Ovens in 1927.

From the annual report of the Secretary for Mines it is seen that the quantity of coal carbonized in coke ovens of all types in Great Britain during 1927 amounted to 17,425,126 tons, compared with 16,393,867 tons in 1925. The coke obtained was 11,837,135 tons; the corresponding figure for 1925 being 11,008,686 tons. The average monthly number of beehive ovens in operation, at 1808, showed a reduction; the figure for 1925 being 2229. On the other hand, the figure for bye-product ovens increased from 7891 to 9731. There is practically no difference between the quantity of coal carbonized at coke ovens and that dealt with at gas-works; the Board of Trade Return for 1927 disclosing that 17,703,593 tons was carbonized in that year by authorized gas undertakings in Great Britain. The coke made by gas undertakings—11,939,375—was also almost identical with the output of the coke ovens.

The "K.S.G." Low-Temperature Process.

In this issue of the "JOURNAL" is published an article, translated from the report of the Tar, Benzole, and Bye-Products Committee, presented at the annual meeting of the Association Technique, describing the operation of a "K.S.G." low-temperature plant installed at Karnap, near Essen. The retort itself, which comprises two concentric drums which rotate as one, constitutes a noteworthy engineering feat; and the installation at Karnap, which was built in 1924, and with the exception of a few short interruptions has been in continuous operation since then, has successfully carbonized over 50,000 tons of coal from the Stinnes mines, besides periodic consignments from foreign sources. Work has already been started on a 600-ton plant to be erected near New Brunswick, U.S.A. The plant will consist of eight retorts, seven of which are to be worked continuously, one being kept as a spare. The gas will be mixed with blue water gas and supplied under contract as town gas. On the Continent, negotiations for several plants are well advanced, while it is understood that in this country work is to be commenced shortly on a full-sized installation to be operated near London.

PERSONAL.

Mr. E. M. EDWARDS, Assistant General Manager of the Holyhead and North Wales Gas and Water Corporation, Ltd., has been appointed Engineer and Manager to the Sittingbourne District Gas Company.

Mr. S. WRIGHT has been appointed Assistant Engineer at Colne, and Mr. S. SMITH Assistant Engineer at Dunfermline. Both these gentlemen hold the Diploma of The Institution of Gas Engineers, and both were Assistants to Mr. Harold E. Stone, Engineer to the Birkenhead Gas Department.

Dr. T. H. BUTLER, Managing Director of Messrs. Wm. Butler & Co. (Bristol), Ltd., tar and resin distillers, has succeeded to the office of President of the Bristol Incorporated Chamber of Commerce and Shipping.

Mrs. G. W. NORMAN, of Chapelizod, wishes to thank her numerous friends for their kind expressions of sympathy in her recent bereavement.

[An obituary notice of Mr. Norman, who for many years was an outstanding figure in Irish gas circles, appeared in the "JOURNAL" for Aug. 1 last.]

Midland Association of Gas Engineers and Managers.—The autumn meeting of this Association will be held on Thursday, Oct. 11, in Birmingham.

FORTHCOMING ENGAGEMENTS.

[*Secretaries of Gas and Kindred Organizations are asked to assist in making this diary of events as complete and useful as possible by sending the earliest intimation of all meetings.*]

Sept. 4.—SOCIETY OF BRITISH GAS INDUSTRIES.—Council meeting in the afternoon.
Sept. 5-7.—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Annual general meeting in Edinburgh.
Sept. 19.—BRITISH COMMERCIAL GAS ASSOCIATION.—Meetings of the Executive and General Committees, in London.
Oct. 11.—MIDLAND ASSOCIATION OF GAS ENGINEERS AND MANAGERS.—Autumn meeting in Birmingham.
Oct. 22-24.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual Conference at York.

THE INSTITUTION OF GAS ENGINEERS.

All meetings take place in the Council Room at 28, Grosvenor Gardens, unless otherwise stated.

Sept. 18.—Finance and Executive Committees in the morning; Council meeting in the afternoon.
Oct. 8.—Emergency and Finance Committees in the morning; Council meeting in the afternoon.
Oct. 9.—Gas Education Committee.
Nov. 12.—Emergency and Finance Committees in the morning; Council meeting in the afternoon.
Nov. 13.—Executive Committee of Gas Education Committee.
Dec. 10.—Emergency and Finance Committees in the morning; Council meeting in the afternoon.
Dec. 11.—Executive Committee of Gas Education Committee.

ON THE ELECTRICAL SIDE.

Gas and Electricity at Leeds.

According to a local paper a scheme is afoot for the amalgamation of the Leeds Corporation Gas and Electricity Departments. It is contended that economies could be effected, and overlapping obviated, if the undertakings were placed under one control. Last year both departments made good profits. Alderman D. B. Foster, Chairman of the Electricity Committee, has been one of the principal advocates for the amalgamation of the services; and in conjunction with the Lord Mayor, the Chairmen and Deputy Chairmen of the Finance, Gas, and Electricity Committees are going to consider the possibilities of co-ordination.

The idea does not meet with wholehearted support from one of the electrical journals—to wit, the "Electrical Times." Here is what a writer to that paper thinks about it: "It is a little disturbing to hear that a scheme is afoot for the amalgamation of the Leeds Corporation Gas and Electricity Departments. It is contended that great economies could be effected, and overlapping obviated, if the undertakings were placed under one control. Certainly the 'overlapping' would be obviated—in fact competition would be obviated, and canvassing of the Electricity Department in streets supplied with gas would probably be suppressed just as firmly as it is in another big Yorkshire city where both gas and electricity are under municipal control. The 'economies,' on the other hand, are imaginary and could only operate in prejudice of one or the other of these services, which by nature are essentially competitive. It is an old, old story. We thought that all responsible municipal authorities had learnt this lesson, and that they knew the reasons why joint gas and electricity under one municipal control had had to be divorced and given back their liberty in every important instance on record."

The writer of the foregoing is certainly not sitting under a cloud of doubt; but it cannot be said that all who have studied the problem closely have come to the same conclusion. We remember a critical study which Mr. Samuel Insull, who is President of the People's Gas Light and Coke Company, Chicago, presented at a convention of the American Gas Association not long ago. Mr. Insull strongly advocated closer co-operation between the gas and the electrical industries. To his mind the two industries are not really competitive. Both are regulated monopolies, and both are sellers of energy; but they deliver their energy in different forms. When they do come into competition, friendly co-operation should uncover the natural line of cleavage between them, on an engineering and economic basis, so that each may do the work it can do best.

Apart from the fact that it may relieve mental tension, it is difficult to see what is to be gained by being dogmatic regarding such problems as this. Though admittedly not under municipal control, there is a joint gas and electricity concern in the South of England which is unquestionably thriving in both directions of supply. As the Chairman and Managing Director of this undertaking said only a few months ago, for cheap production gas should be made the servant of electricity, and electricity in its turn the servant of gas. The policy of interlocking gas and electricity services, though not widely followed in this country, is largely adopted in America; and whenever it has been pursued, gas has acted as a stimulant to the sales of electricity, and electricity has aided the sales of gas.

Heating and Water Heating by Electricity.

A paper by Messrs. J. L. Carr, B.Sc., A.M.I.E.E., and J. D. Peattie, B.Sc., A.M.I.E.E., presented at the recent convention of the Incorporated Municipal Electrical Association at Bath, contains many interesting points regarding domestic electric appliances. On the question of room heating, the authors observe that electric radiators used for occasional heating—as, for example, at meal times—are desirable appliances from the supply point of view, and energy may be provided cheaply. For continuous duty during the winter months, however, the load so created is added to the heavy winter system load, and overlaps the peak. Energy for this purpose cannot be supplied cheaply, and such use at low tariffs is to be discouraged. Future development in domestic electrification, so far as heating is concerned, should be along the lines of a storage system; energy being supplied at night, and stored heat utilized in the daytime. The authors admit, though, that such a system has the serious disadvantages of being costly to instal, and of requiring considerable space. This space, of course, is not available in most modern houses.

In the electric geyser, the heating unit is immersed in the water and is arranged for a high loading. This method possesses undesirable characteristics. In the first place, the design of the heaters must be such that the space occupied is small, and the surface exposed to the water great, and accordingly mica-insulated metal-sheathed blade elements are largely used. From their very nature the life of such elements must be comparatively short, and any interruption in the flow of water results in their destruction. Complete interlocking arrangements are therefore necessary for satisfactory operation, but in no case examined has it been found that the precautions are adequate and complete. A further type employs resistors in direct contact with the water. These are now specifically forbidden by the Regulations of the Institution of Electrical Engineers. The use of the geyser has been discouraged by many undertakings, because of network considerations. The installation of heavily loaded devices of this character would, in many instances, necessitate additional phase wires being brought in at the service, with resultant increased capital charges on the supply.

Regarding electric storage water-heaters, Messrs. Carr and Peattie observe that in some cases, by means of automatic time switches, the supply may be made available only at times convenient to the undertaking. The load factor is high, and energy may therefore be supplied at low rates. With regard to time switch control, however, the heavy capital and maintenance charges involved with such an expensive piece of mechanism, together with the cost of additional metering, render a preferential tariff for night heating impracticable in cases where the running charge for current approximates 0·5d.

IRISH ASSOCIATION OF GAS MANAGERS.

ANNUAL MEETING IN BELFAST.

The Thirty-Sixth Annual Meeting of the Association was held in the Ulster Minor Hall, Belfast, on Tuesday, Aug. 14, under the Presidency of Mr. WILLIAM MILLAR, of the Cookstown Gas and Electric Light and Power Company, Ltd. There was a good attendance of members to take part in a well-arranged programme; and at its close the general feeling was that the meeting had been a complete success.

A CIVIC WELCOME.

The opening procedings were graced by the presence of the Lord Mayor of Belfast (the Right Hon. Sir W. G. Turner), who had with him on the platform Mr. J. D. Smith, M.Inst.C.E. (Engineer and Manager of the Belfast Corporation Gas-Works), and Councillor M'Laurin (Chairman of the Gas Committee) Called upon by the President to extend a civic welcome to the Association,

The LORD MAYOR said: I am very pleased to have the opportunity, on behalf of the citizens, of welcoming to Belfast the members of the Irish Association of Gas Managers, on the occasion of their annual meeting. It is always a pleasure to meet the members of such an organization, and to extend the best wishes of the people of Belfast to it in its deliberations. The citizens of any large city owe a great debt to public utility undertakings; and I hope the result of your conference will be profitable not only to the towns and cities you represent, but also to the public generally. The use of gas is almost universal nowadays; and its general adoption for heating and lighting purposes marked a great advance in the social and economic habits of all classes of the community. It is hard to realize what our cities would be like if we were deprived of its advantages. I know your aim is always to render the best possible service to consumers; and I am glad to say this is the object always kept in view by the large and prosperous undertaking in Belfast, which, under its highly efficient and skilful Manager, Mr. Dunlop Smith, goes from success to success, and is one of the best managed and most efficient undertakings of its kind in the United Kingdom. [Applause.] When your discussions are ended, I hope you will find time to visit and enjoy some of the beautiful scenery in Belfast and surrounding districts, and that you will all carry away most pleasant recollections of your visit. I again welcome you, and hope your conference will be a great success and benefit to all.

A hearty vote of thanks for his welcome was accorded the Lord Mayor, on the proposition of the President.

PRESIDENTIAL ADDRESS OF MR. W. MILLAR, OF COOKSTOWN.

It was with considerable anxiety of mind that I thought of a subject of sufficient importance to our profession upon which to address you, and at last I decided upon experiences met with in the course of laying down an electrical generating station and overhead distribution system for the town.

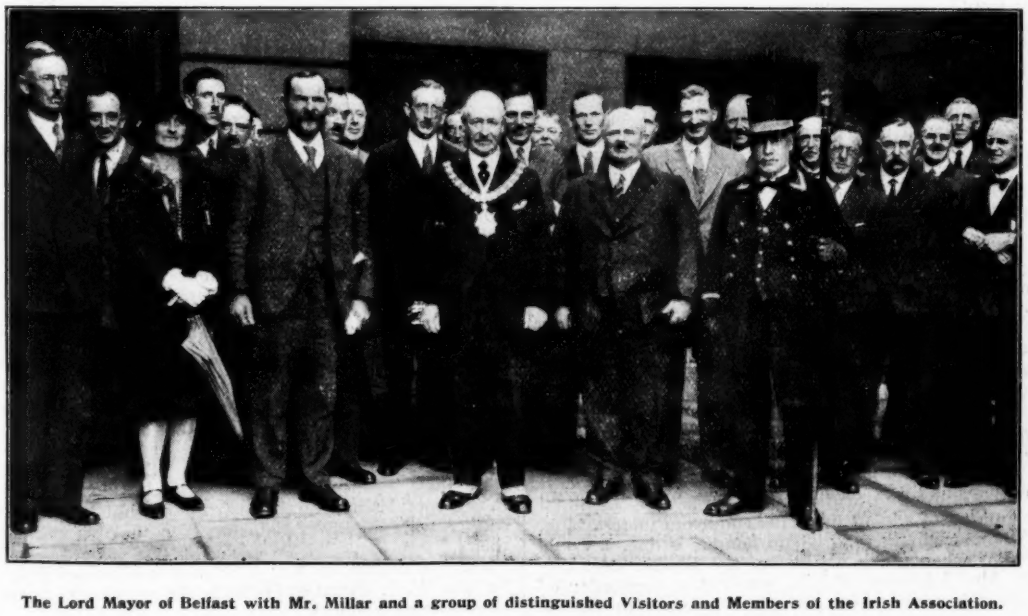
For a considerable time there was a movement in Cookstown to start a company to generate and supply electricity in the town; and after consultation with experts, the local authority took up the matter so far as to advertise for tenders for lighting the town and supplying consumers. The Cookstown Gas and Electric Light and Power Company was still in existence, with a staff capable of carrying on all clerical work, collecting rents, &c. I advised my Company to look into the matter, as the place was far too small to have rival concerns doing their best to cut each other out, while at the same time neither would be paying their way, nor would they be likely to give good service to the consumers. My Company sent in a tender, which the Urban Council did not see its way to accept. The Company then took steps to obtain a Special Order from the Electricity Commissioners, and this Order has since been obtained, and the combined undertakings are being worked under it in conjunction with the gas-works.

The scheme was laid out with the generating station on the gas-works ground, and it was arranged that our ordinary consumers of gas would be the driving power. I myself made out the plans for a reinforced concrete house set upon concrete piles driven into a running sand subsoil, and provision was made for a concrete reinforced raft covering the whole floor space except 3ft. wide all round so as to damp machinery vibration from the walls. These plans were handed to my son, Mr. F. C. Millar, a fellow member, who carried out the work of erection by direct labour.

The station has been designed as follows: "The first set is of 25 B.H.P., driving a 14-KW. compound-wound dynamo, direct coupled. The second set is of 68 B.H.P., driving a 40-KW. in the same manner as the smaller one. The switchboard and gear are erected upon an elevated concrete balcony, the enclosed space under it being used as an office. The third set in the design will likely be a 90 or 95 B.H.P. engine driving a dynamo of 54-56 KW., and a fourth set in the design is a 120-150 B.H.P. engine driving a dynamo of 65-85 KW. The machinery erected runs in a straight line along the centre of the station, and the cables between the dynamos and the switchboard lie in fireclay tubes, with a manhole opposite each generator; and these tubes are continued in the same manner behind the switchgear platform, the conduit tubes being surrounded by cement concrete between manholes.

The distribution system is on the three-wire plan—that is, two outers between which there is a difference of potential of 440 volts, and a split neutral, and lighting consumers are connected from a 440-volt cable with a return to neutral, which gives a pressure for house lighting of 220 volts; but for power, connections are made from and to the outers. There are three circuits in the town, and these have been designed to be as near as possible of equal length.

To cope with light load after midnight, and to dispense with the use of batteries, a small generating set (12½ actual B.H.P. engine, driving a pair of 220-volt dynamos on one bedplate) has been installed. These are self-driven by the pulley between the two dynamos. The cables from the set to the switchboard panel are connected in series, in this way giving 440 volts at the switch gear for distribution. One advantage of this little set connected in this way is that it is entirely self-balancing, and so can be left alone with the night stoker to look after it



The Lord Mayor of Belfast with Mr. Millar and a group of distinguished Visitors and Members of the Irish Association.

during the small hours of the early morning, and also in daytime in summer and at all times when the demand is small enough for the set to deal with.

Our Special Order is called the Cookstown Electricity Scheme, 1925, and gives powers to open streets and roads reparable by the public authority within the area as shown in the lodged map. It also gives authority for opening roads not reparable by the authority which are mentioned in the schedule of the Order. The third schedule describes the streets and roads in our area in which we are, within two years, to lay suitable and sufficient distributing mains for the purposes of general supply. This was all done before date of Order. The fourth schedule deals with the charges for current, and is very short. Section I stipulates that in respect of each quarter the maximum price shall be 1s. per unit, and there is a preamble that "the expression unit shall mean the energy contained in a current of one thousand amperes flowing under an electromotive force of one volt during one hour."

It has often been discussed by the proprietors of my Company as to whether it might not have been a better policy to apply to the Electricity Commissioners for powers to erect a generating station only, and work the commercial end as a private concern without powers. Given the goodwill of the community, this might have been a wise plan, and would no doubt have saved quite a large sum which had to be spent in obtaining the complete Order. There would also have been less restrictions in the future working, if everything but the generating station had been outside the Order. Some grumbling shareholders of the Company even now suggest that a better policy would have been to sit still and do nothing. But I think that, if that policy had been adopted, we should have quickly found any old stick would have been thought good enough to

Mr. W. Millar, of Cookstown,

President of the Irish Association of Gas Managers, 1928.

have a fling at the Gas Company, and an electricity undertaking of some sort would certainly have been established in the town, against our Company.

In regard to the manufacture of gas best suited for general purposes of heating, power, and lighting, after much experimenting I have found that for a little country works like my own, horizontal retorts set so as to be heated by a side generator, and worked with big charges 8 to 12 hours, give very good results. An offtake pipe from the top of the generator, and connected to the foul main, gives a mixture that works well for general purposes; and one can get easily 16,000 c.ft. per ton of coal of about 475 B.Th.U. per c.ft.

As regards public lighting, this is done by gas through the average meter system. All corner lamps are 300-c.p. cluster burners, and between two hills in the centre of the town, these lamps are 250-c.p. cluster burners. The rest of the town is lighted by single burners of 100 c.p. each. Everyone has to admit that the town has been well lighted. There is a sliding-scale of charges in force which applies to the gas used for public lighting and also to gas used by the road authority at their road plant, driving a gas engine which works the stone-breaker and tarmacadam mixers.

In conclusion, I would like to say that I am still of the opinion that there is no public or private service that gas cannot do equally as well as any other rival competitor. It was only when the march of events threatened us with a wipe-out that I moved in the matter of adding an electric end to our undertaking. And to give honour to those to whom honour is due, I would like to say that when the late Chief of the Belfast electricity undertaking, Mr. Johnston Wright, received a deputation of my Directors, when my plans were put before him for his opinion—particularly as to driving by our own gas—he said "Every word in the statement you make in that paper is correct." Gentlemen, when electric current can be produced as a bye-product of the gas industry, no other plan can touch it. Gasification of coal is the right way to use coal; burning to destruction is wrong.

I hope the deliberations of the meeting will be of benefit to our gas industry.

Mr. A. S. Brook (Lisburn), proposing a vote of thanks to the President, said he could quite understand that Mr. Millar had found great difficulty in choosing a subject for his address—for one thing, because so many questions were dealt with by the various Associations that it was hard to find anything new to talk about. The President had, however, acquitted himself well. The address was not open for discussion, or there were points which one would be greatly tempted to raise. In Lisburn electricity was just being introduced; and he believed that on the previous day the first spade of soil had been turned. Thus the address had proved of particular interest to him.

Mr. J. M'Nicholl (Cork) seconded the vote, remarking that the address which Mr. Millar had given them was characteristic of the man. He had drawn, in his own breezy fashion, upon his experiences in his rather unique position at Cookstown. It was, he believed, the first occasion on which they had had a contribution dealing with electricity generation in a gas-works—and not generation for the purposes of the gas-works alone, but for supplying to the public. Mr. Millar had been extraordinarily well advised in his choice of a subject, which he had dealt with in a manner that made it quite plain to all of them that gas could well hold its own, even in circumstances of this kind. He noticed that the public lighting of Cookstown was still carried out by gas, though electricity was available; and he hoped this would continue to be the case. The address was a credit to Mr. Millar, and to the Association. He had now the pleasing duty to perform of presenting to Mr. Millar the President's Medal, as a souvenir of his year of office. With the medal went the wish of every member of the Association that it might always be a reminder to Mr. Millar of a very happy year. [Applause.]

The President thanked the members for their vote.

Committee's Report and Accounts.

The Hon. Secretary and Treasurer (Mr. George Airth, of Dundalk) then read the following report of the Committee:

Your Committee have much pleasure in reporting that the proceedings at our Cork meeting on Aug. 16, 1927, were a great success. Notwithstanding that the distances to be travelled were so great, the number present exceeded that of any other year since 1914. Your grateful thanks have been expressed to the Chairman and Directors of the Cork Gas Company for their generosity and kindness in ministering so well to our comfort—not only at luncheon and dinner, but they also defrayed all the costs of our excursion to Blarney Castle, and the expenses in connection with the hall in which the meeting was held. The papers read by Mr. Millar, of Cookstown, and Mr. Walmsley, of Londonderry, at our conference caused a good discussion.

It is with profound regret we chronicle the death on July 21 of Mr. G. W. Norman, who was an outstanding figure in our Association, and a Burgess of the City of Dublin. Mr. Norman was an Extraordinary Member of our Association for 34 years; and for 30 of these he held the position of Hon. Auditor. He foresaw the immense advantages of organization; and his energies were unceasingly expended in bringing members to join our Association, to their advantage. He invariably attended our meetings; and his advice in the Council of the Association was always of the most valuable description. Last year, during our annual proceedings at Cork, a trip was made to the world-famed Blarney Castle; and there, amid the historic ruins, Mr. Norman was presented by the members of our Association with a silver tea service and salver as a token of their appreciation of the many services he had rendered. As our President (Mr. Joseph McNicholl) truly said, when handing over the gift, Mr. Norman was a pillar of strength to the Association, and the token was small considering the yeoman services rendered by the recipient. By Mr. Norman's death we all feel we have lost a friend. A true gentleman of most kindly disposition, he endeared himself to all with whom he came in contact. Many letters have been received by your Secretary expressing the great regret with which his death was read in our technical papers. Your Committee have instructed your Secretary to write to Mrs. Norman and family, and extend to them our deepest sympathy. The number of ballot papers sent in was 29. The balance on hand in Treasurer's account is £32 17s. 7d.

Mr. L. W. Dalby (Wicklow), who had audited the accounts, next read the balance-sheet for the twelve months ended Aug. 1 last, which showed a balance in hand on that date of £32 17s. 7d. This compared with a sum of £28 1s. on the corresponding date of the previous year. It had, he said, always been Mr. Norman's idea that they should endeavour to raise their balance in hand to £100. It would be very nice to see this desire brought to fruition; but he thought the accounts were highly satisfactory for an Association such as theirs.

On the motion of Mr. A. Kirkham (Enniscorthy), seconded by Mr. W. J. Buckley (Tralee), the report and accounts were unanimously adopted.

THE LATE MR. G. W. NORMAN.

As a token of sympathy with Mrs. Norman and the family, the members stood in silence.

SCRUTINEERS.

The next business was the appointment of Scrutineers, to go through the ballot papers; and for this duty Messrs. J. Oxley (London) and L. P. Phillips (Dublin) were selected.

DISTRICT REPRESENTATIVE ON THE COUNCIL OF THE INSTITUTION.

Mr. AIRTH proposed that as District Representative on the Council of The Institution of Gas Engineers, Mr. L. W. Dalby be elected, as he was a member of the Institution, and it was to be hoped the subsequent Scrutineers' report would show he would be the President of the Association for next year.

Mr. M'NICHOLL seconded this, and it was agreed to.

PAPERS READ.

The following papers were then read and discussed together. This portion of the proceedings is held over for publication next week.

Mr. JAMES L. HYSLOP, Chief Assistant, Belfast Corporation Gas-Works, on "Carbonization in Vertical Retorts."

Mr. W. H. ROBERTS, of the Donaghadee Gas Company, on "Dual System of Charging for Gas *v.* Electricity."

The authors were heartily thanked for their contributions.

NEW AUDITOR.

Mr. DALBY said he greatly regretted that the necessity had arisen for the appointment of a new Auditor; and he would like to suggest for the position Mr. L. P. Phillips, of Dublin, who had always taken a keen interest in the Association. He was quite sure he would render the utmost assistance to the Secretary and to the occupant for the time being of the Presidential chair.

Mr. H. W. SAVILLE (Wexford) seconded this, and it was unanimously agreed to.

Mr. PHILLIPS, returning thanks, said he knew how much Mr. Norman had done for the Association. He had been very much more than merely Auditor.

MARKETING OF COKE AND TAR.

Mr. BROOK said he desired to refer to the question of the marketing of coke and tar. He wished to throw out suggestions to the Committee, in order that they might have some work to do. His idea was that they should divide up Ireland into districts. The sending of coke into each other's districts was a thing which, to his mind, should be done away with. Some years ago he had endeavoured to get the various managers to co-operate and circularize information with regard to stocks and prices. He sent out a lot of circulars, but received very few replies. He thought that if the Committee of the Association would take up this matter it would be most profitable to them all. With regard to tar, he had been very much disappointed that in the North of Ireland there was not some scheme of co-operation in the matter of its disposal. This was another subject which he would like the Committee to take in hand, with a view to getting a scheme into working order.

LOSSES OF THE TECHNICAL PRESS.

Mr. T. J. REID (Ballina) moved a vote of condolence with the "GAS JOURNAL" and the "Gas World" on the loss that both had recently sustained by the death of their respective Editors. He did not think it was necessary for him to stress the great value of the Technical Press to the industry. Associations such as theirs could ill do without it.

Mr. M'NICHOLL seconded the vote, which was passed.

OFFICERS FOR 1928-29.

The Scrutineers announced the election of the following officers for the ensuing twelve months.

President.—Mr. L. W. Dalby, Wicklow.
Vice-President.—Mr. William Buckley, Tralee.
Members of Committee.—Messrs. G. A. Gilmore, Warrenpoint; T. J. Reid, Ballina; and H. W. Saville, Wexford.
Auditor.—Mr. L. P. Phillips, Dublin.
Hon. Secretary and Treasurer.—Mr. G. Airth, Dundalk.

NEW MEMBERS.

The gentlemen named below were submitted for membership and elected:

Ordinary Members.

Mr. A. Law, Limerick.
Mr. D. McElwee, Killarney.
Mr. R. J. McElwee, Coleraine.

Extraordinary Members.

Mr. G. Richings, Manchester.
Mr. J. N. Sutton, Cork.
Mr. J. J. Whimster, Newcastle-on-Tyne.
Mr. D. J. Thomas, Dublin.
Mr. D. H. Munro, Glasgow.

LUNCHEON.

This concluded the Association's business meeting, and the members and ladies adjourned to the Carlton Restaurant, where they partook of light refreshments on the invitation of the President.

NATIONAL GAS COUNCIL MEETING.

In the afternoon there was a meeting of the Irish District Executive Board of the National Gas Council of Great Britain and Ireland, at which there were addresses by Mr. E. J. Fottrell and Mr. W. M. Mason. Mr. J. D. Smith was in the chair.

A report of the meeting will be found on other pages of this issue of the "JOURNAL."

THE DINNER.

In the evening the members and ladies dined together in the Carlton Restaurant, with the President in the chair. With speeches and a first-rate musical programme, an enjoyable evening was spent.

After the Loyal Toast, Mr. SAVILLE proposed "The President," to which Mr. MILLAR replied. The next toast—that of "The Belfast Corporation Gas Department," coupled with the name of Councillor M'Laurin, the Chairman of the Gas Committee—was submitted by Mr. REID, who said that the rest of Ireland looked upon the Belfast Gas Department with pleasure and with pride. The chief credit for this excellent condition of affairs belonged to Mr. J. D. Smith; but without an able Chairman and Committee he could not have accomplished what he had. Councillor M'LAURIN, in reply, remarked that if they had

AT ROSTREVOR.

not now in Belfast the cheapest gas in the United Kingdom, he believed they would have it in September. This position was due to their excellent Engineer and Manager, Mr. Smith. It was gratifying to him to be able to say that their gas undertaking was going on from success to success. The last year had been the most successful one in the history of the concern. [Applause.] Their residuals, he believed, had met the coal bill. They were not afraid of electricity. In fact, he thought their Manager was unable to meet all the demands that were made upon him. They claimed that the Belfast gas undertaking was second to none. Mr. M'Nicholl, proposing "Kindred Associations," remarked that it was not necessary to say much about this toast. The different Associations were much indebted to each other. They were in fact interdependent. Among those present was the Joint Manager of the National Gas Council, Mr. E. J. Fottrell, whose name it was a pleasure to couple with the toast. Mr. Fottrell, in the course of his reply to the toast, mentioned the presence at the dinner of Mr. W. M. Mason (Manager of the British Commercial Gas Association) and a number of members of the Society of British Gas Industries. Thereafter Mr. Mason submitted the toast of "The Ladies," to which Mr. Maclay responded.

Excursion to Newcastle.

The following day was devoted to a delightful excursion. The journey was made in motor coaches through Lisburn, Banbridge, Newry, and Warrenpoint; Rostrevor being reached shortly after mid-day. Here dinner was served in the Great Northern Railway Hotel. Thence the route was to Kilkeel; and afterwards along the coast route to Newcastle unsurpassable views of mountain and sea were enjoyed. After tea in the Slieve Donard Hotel at Newcastle, the party started on the homeward journey, which was by way of Clough and Ballynahinch. All those who were not familiar with the district must have been deeply impressed by the grandeur of the scenery. Before the members and ladies separated, well deserved tribute was paid in eloquent terms by Mr. Reid to the successful manner in which Mr. Airth had organized the day's proceedings.

City Gas-Works.

During their stay in the city, members of the Association were cordially invited by Mr. Smith to visit the Belfast Corporation Gas-Works.

NATIONAL GAS COUNCIL—IRISH DISTRICT BOARD.

MEETING IN BELFAST.

Following upon the meeting of the Irish Association of Gas Managers, there was, on Tuesday afternoon, Aug. 14, a meeting in Belfast of the Irish District Executive Board of the National Gas Council of Great Britain and Ireland; the chair being taken by Mr. J. D. SMITH, M.Inst.C.E., who remarked that all members of the Irish Association were heartily invited to be present.

Minutes and an Apology for Absence.

The Secretary (Mr. H. W. Saville, of Wexford) read the minutes of the last annual meeting; and they were confirmed. He also notified the receipt of the following letter of apology for absence from Mr. R. Bruce Anderson:

> I am sorry I cannot attend the meeting on the 14th inst.
>
> Mr. Fottrell will report upon the work specially done by the Council for Irish interests—especially in relation to the Dundalk Rating Appeal and the new Gas Regulation Act, in which we secured valuable amendments.
>
> All the Irish undertakings we are connected with subscribe to the Council; and we consider we get very good value. I hope you will "rope in" other gas undertakings in the Free State.

Office Bearers.

On the suggestion of Mr. J. A. Pemberton (Sligo), seconded by Mr. A. S. Brook (Lisburn), it was agreed to re-elect the present Chairman, Vice-Chairman, Secretary, and Management Committee, with the addition to the Committee of Mr. G. Walmsley, of Londonderry.

REMARKS BY THE CHAIRMAN.

Functions of the National Gas Council.

The Chairman: In taking the chair to-day, it is not my intention to go into any details connected with our organizations, but simply to make a few introductory remarks. The National Gas Council fills a definite and urgent need, and has already shown its value to the industry. I am pleased to notice that the members of this Board represent 99 p.ct. of the gas made in Ireland, and I hope shortly that this will be 100 p.ct. The National Gas Council does not encroach upon the functions of any existing organization. Its aim is to extend the sphere and usefulness of the technical and other associations within the industry by facilitating and accelerating such changes in the conditions under which the industry conducts its operations as are best calculated to promote the interests of the buyer and seller of gas. Gas is an almost universal fuel, and (as the British Commercial Gas Association is rapidly teaching the people of these islands) the cleanest, most adaptable, and most readily-controlled form of fuel. The function of the National Gas Council is to remove every legislative or other obstacle which stands in the way of the fullest utilization of gas, and to prevent the imposition of unnecessary and irritating restrictions upon its extended use, propounded by persons no doubt well-meaning, but not equally well-informed. Some of the legislative barriers are of great antiquity; but fortunately their removal and the substitution of modern enactments involve no political considerations of a controversial kind. They do involve, however, continuous educational effort among our legislators and national and local Government Departments; and work of this kind occupies a considerable proportion of the time of the officers of the Council. Every undertaking should play its part, confident in the knowledge that it will in due course reap the benefit of the good work of the organization.

Work and Policy of the "B.C.G.A."

The work and policy of the British Commercial Gas Association is now so well known in the gas industry, and, I may add, in the advertising world, that only brief introductory comment is necessary from me. At the same time, I would like to pay my tribute, as I have always given my heartiest personal support, to this national organization. I am pleased to state that my Committee also keenly appreciate the need for advertising in all its present-day branches, and that the Belfast Corporation Gas Department is included in the 93 p.ct. of the industry (based on output) now banded together for sales development. We have contributed to this work because we have found it profitable and necessary to do so, and because we believe it is wise investment. It is only by the provision of a national advertising "pool" that funds can be provided to undertake adequately publicity on a really national scale, and provide a programme that undoubtedly benefits every member—both large and small. I also believe that, to get the best results, we must use local means of advertising, to supplement the national work. If ever there was a time in the history of our century-old industry when strong united action in defence, maintenance, and development were essential, it is surely now. Politicians seem to be obsessed with the supposed miraculous powers of a sister industry to accomplish all manner of wonderful things for the country. That industry undoubtedly does possess great potentialities for usefulness; but it is absurd, as well as wrong, to think that it could possibly carry out the great national services in the supply of lighting, heating, and power, as well as in the provision of smokeless fuel, and the production of bye-products, now so economically and reliably accomplished, on sound business lines, by the gas industry. Faced with such a political position, it is surely up to our industry to co-operate to the utmost in informing and educating public opinion by advertising, good showrooms, and, most important of all, by general good service in the way of regular quality of gas, at good and steady pressure, supplied at the lowest price. I do not know if the matter will be mentioned later, or be open for discussion, but I would also like to say that I feel certain some system of regular inspection of gas appliances on the district, and the maintaining of them in decent working order, are essentials of success in the future.

ADDRESS BY MR. FOTTRELL.

Mr. E. J. Fottrell (Joint Manager of the National Gas Council) then addressed the meeting, dealing in some detail with the work of the Council, particularly as affecting Ireland. During the past twelve months, he said, the actual work upon which the Council had been engaged in Ireland had been almost entirely directed towards the Free State; but what had been accomplished there would probably be of interest to all present. Dealing with matters generally, he said: I will not volunteer any apology for not carrying out strictly the task allotted to me by Mr. Airth in the official programme of the meeting this afternoon, because if I were to attempt to do so I should require very much more time than is available to Mr. Mason and myself.

Legislative Obstacles.

The work of the National Gas Council consists very largely in endeavouring to remove the legislative obstacles which stand in the way of the fullest development of the use of gas. The work which the Council has done—and is doing—in this connection has amply justified its existence. Seeing that public gas supply had its birth in these islands, it is not surprising to

find that some of the legislation under which the industry operates dates back more than eighty years. From the year 1847 up to the outbreak of war, such alterations in, or additions to, gas legislation as were made were the outcome of proposals emanating from sources outside the gas industry. With the advent of the National Gas Council, it was possible for the first time for the industry itself with a unanimous voice to declare to the various legislative bodies what alterations were found to be necessary as a result of changes in the conditions under which we carried on our work from day to day. It was moreover possible for the gas industry to say in very definite terms if any legislation dealing with other industries was likely adversely to affect the development of our own. In the early years of its existence, the National Gas Council was mainly concerned with resisting proposals which, as the Chairman has told you, emanated from the sources doubtless well-intentioned, but of necessity not fully informed. Before long it became evident that the Council constituted a body whose collective opinion should be sought when proposals were afoot to introduce legislation calculated to affect, directly or indirectly, the great public utility service which it represented. The important place occupied by gas supply authorities in the life of the nation to-day is very largely due to the work which has been accomplished jointly by gas companies and municipal gas departments acting through the National Gas Council, which has been fortunate in having as its President through many troublous years Sir David Milne-Watson, to whose untiring efforts the successful accomplishment of its work is undoubtedly due.

Formulation of Reforms.

Having established itself as a force to be reckoned with by all those contemplating legislative changes likely in any way to affect gas supply, the Council took in hand the formulation of reforms which the long experience of those engaged in the industry indicated as clearly necessary in the public interest. A statement was prepared after many consultations with representatives of undertakings, large and small, company and municipal, throughout these islands, and submitted to the Board of Trade in London. That statement has been published in the "Monthly Reports" of the Council, and, as you will see, embodies a number of proposals, all eminently reasonable and calculated to extend the use of gas under conditions suited to modern needs. Although these proposals were primarily intended to apply to the legislation controlling the use of gas in Great Britain, they are essentially applicable to the supply of gas both in Ulster and the Irish Free State, where—in common with Great Britain—the legislative control of gas supply authorities is more remarkable for its archaic character than for its common sense. A careful study of these proposals is, therefore, as necessary in Ireland as it is in England, because the problem is the same in both countries—namely, to impress upon our legislators the important bearing which gas supply has upon the national and individual welfare, and the necessity of removing every obstacle in the path of its development.

The requirements of gas undertakings in different parts of these islands may vary in detail, although in principle they remain the same; and the line which reform should take may be briefly described as placing gas supply undertakings in a position to serve the public needs more on the lines of the other commercial undertakings with which in many cases they are in competition. Most of the regulations governing gas undertakings to-day are based upon the assumption that gas supply authorities are monopolists against whom the public must be protected. Whatever justification may have existed in years gone by for taking this view, there can be no doubt whatever that no justification exists to-day. While it is, perhaps, true to say that gas undertakings have, in actual practice, a monopoly in the supply of gas, they certainly have not a monopoly in the supply of light, heat, or power. Not only are they in competition with electricity, the suppliers of which have much more freedom to develop their service than have we, but they are also in competition with the suppliers of coal and oil, who are subject to no statutory regulation whatever.

To Extend the Sphere of Usefulness of Gas.

We are not asking—and I am sure it would never be suggested—that gas supply should be relieved from all control. What we do ask (and it is the underlying *motif* of every proposal put forward by the Council) is that we should be in a position to avail ourselves of every opportunity which offers of reducing our operating costs and extending the scope of our activities. The immense development which has taken place in the use of gas, even in the post-war years, shows what can be accomplished under the most adverse conditions. The development which would be possible were gas undertakings in a position to proceed along rational lines, would be vastly greater. The subject, however, is one which at any rate in the past was difficult to invest with any element of romance, and did not therefore commend itself to those in search of vast schemes of national development. We have seen what has taken place in Great Britain and in the Irish Free State in the case of other public services such as electricity supply, where the element of romance appeared to exist. In both countries the Government has guaranteed large sums of money for the purpose of making electricity available to the largest possible number of the community. The explanation given was that depression could be turned into prosperity by a cheap and abundant supply of electricity.

We have not asked for—nor do we want—either a State subsidy or a State guarantee. We merely ask for the removal of restrictions which prevent us from ourselves extending the sphere of usefulness of gas. Its present relative sphere may be gauged from the fact that the Gas Light and Coke Company alone supply in the form of gas in London more energy than all the electricity supply undertakings in Great Britain put together. While we have reason to complain of the apathy which has so far been displayed by the British Government towards our persistent demand for the review of gas legislation, we are hopeful that this reform will not long be delayed. The proposals of the National Gas Council were submitted to the National Fuel and Power Committee, whose report it is hoped will shortly be presented. If, as we have every reason to hope, the report deals favourably with these proposals, legislation cannot long be postponed. Fortunately, the matters dealt with are devoid of all political significance; and there is no reason why the recommendations of the National Fuel and Power Committee should not, so far as they are applicable, be adopted by the Governments of both Belfast and Dublin.

Free State Gas Legislation.

During the past few months the Free State Government have amended, in certain minor respects, existing gas legislation; and—as might have been expected—the Bill, which was drafted without prior consultation with those responsible for gas supply in the Free State, contained a number of provisions which would have tended to retard rather than develop the supply of gas within its borders. It was necessary for the Council to take energetic action, and to point out to the members of both Houses the amendments needed to the Bill as drafted. Several conferences took place with the Minister in charge of the Bill and his officials, as well as with members of both Houses. The result, I am pleased to say, has been most satisfactory, although the Bill in its final form contains some provisions which, in our opinion, are unnecessary. This Bill is, however, by no means a substitute for the larger enactment which will soon be necessary to enable gas undertakings to come into line with modern conditions.

Systems of Charge.

Arising out of the interesting discussion on the paper which Mr. Roberts read at this morning's meeting of the Irish Association, I should like to mention that one of the proposals which we have put forward as our programme is that there should be incorporated in new legislation permission to statutory undertakings, if they find the necessity for it, to institute some other system of charge than the flat-rate system. Personally, I feel very little doubt that facilities for so doing will be forthcoming. It is quite possible that, where an undertaking is selling gas at a reasonable price, the time has not yet arrived when two or three part tariffs are necessary; but when one is selling gas at a price which is comparatively high, then I feel, with Mr. Roberts, that such a tariff should be of exceptional benefit. In saying this, I am, of course, expressing my own personal views. I have investigated the subject at first hand in America and Canada. There they say that they cannot to-day sell gas on the flat-rate system, and that it is only by the institution of one or other of the alternative forms that it is possible to encourage the use of gas by those who are, or should be, our best customers. Under the flat-rate system in force to-day, one portion of your customers—and that the best portion—is paying the cost of supplying another section which is not paying it own way. I do not say that Mr. Roberts' proposal is a panacea for meeting competition; but it is a question that should be closely studied.

WHAT IS THE "B.C.G.A." DOING?

By W. M. Mason, Manager of the British Commercial Gas Association.

In the programme of this meeting it is boldly stated that my colleague and I are to give a review of the work accomplished by the Associations we represent during the last year. If we seriously attempted such a feat, I fear the hour for adjournment would have to be considerably amended. At the same time we welcome the opportunity of discussing some points and principles in relation to our work.

During the past year regular advertising schemes have been in operation in newspapers, magazines, and periodicals, the majority of which we prove from time to time circulate, and unquestionably influence and educate public opinion, in every area supplied by gas. It is to this very important object, as well as to many forms of propaganda, that the revenue of the "B.C.G.A." is devoted.

It would be profitable if managers would test this claim for themselves. Let them take or send to the most important newspaper shop in the town the "B.C.G.A." list of publications in which gas advertisements regularly appear, and they will get at once a really intelligent understanding of what they obtain for their undertaking's individual subscription. They will be convinced, in fact, that for their contribution (and this

applies to the large, though very much more to the small) they are doing their share in providing a fine advertising scheme which actually touches their own best consumers.

INCREASED SUBSCRIPTIONS.

That this national work is being accomplished with profit to the industry, both in safeguarding and in development, is recognized by practically every gas undertaking throughout the country. This is effectively proved by the fact that, during the past year, after various resolutions had been received from district meetings recommending substantial increases in the funds available for this work, the Central Executives recommended first that the joint basic rate for running the "National" co-operative machinery should be raised to 6s. per million c.ft., and later, further recommended that an additional 1s. 6d. per million should be provided solely for advertising. These recommendations, having received the practical backing of many of the largest and most important undertakings, have met with a ready and encouraging response. The query, fairly frequently met with in the past, "What do you do with all the money you get?" has changed, to a large extent, to "How do you manage to do so much with what you get; and isn't it time you had more?" This, surely, may be taken as a very practical endorsement of policy.

On the face of it, advertising looks like an expense, but it is really an asset and an investment. It pays dividends. It creates a goodwill which has a market value. "Publicity costs money, but oblivion costs more." And increased turnover brings increased profits which more than pay the cost of advertising. This has been proved in every branch of commerce.

A WONDERFUL STIMULANT.

What has brought the change in mental attitude in the industry to advertising, propaganda, sales development, and public service? Not only the consistent and persistent preaching of enthusiasts on this side of affairs, and the concentration and special interest created by the activities of the "B.C.G.A." These have undoubtedly promoted and influenced opinion, as have also the innumerable conferences, salesmen's meetings, lectures, and writings on the subject; but the greatest of all stimulants to activity in thought and action is the simple fact that our old industry has been, as it were, taken by the "scruff of the neck" by strong, intense, real, keen competition, and very rudely but very effectively awakened. It is certainly not pleasant to have to contemplate seriously a possible reduction in substantial dividends, but if these are being earned at the expense of efficient works and by neglecting the urgent and proper claims of the customer, the status and welfare of the industry as a whole will not suffer by an awakening which will compel better and more ideal methods of practical public service to be brought into operation.

GOVERNMENT INFLUENCE.

A recent article in the "Gas World" entitled "The Prime Minister Advertises Government Electricity" calls for some comment. The article is excellently written and the writer makes his points well and boldly; but I venture to query the correctness of some of his deductions. It is certainly a fine score for electricity to get a "colossal advertisement" by the Prime Minister, free of cost and extensively reported throughout the country; and, as representing gas industry advertising, we would very gladly accept such a gratuitous blessing. But is the policy behind this political propaganda really sound and desirable? Are claims for the new heaven and the new earth to be speedily made good merely because politicians say so through loud-speakers to crowds even numbering 40,000 people? Exaggerated statements have not infrequently in the past been made from political platforms; and even if no one was bad-mannered enough to interrupt the Prime Minister and ask who was eventually to pay for it all, such a fundamental query will inevitably be put, and the much boomed electricity scheme may not prove such a beneficent "reform" as the politicians anticipate. Many electrical men, indeed, bluntly say that electricity costs to the consumer, instead of being reduced, will be increased.

It may be readily replied that all this is "sour grapes;" but because we cannot get such a thing, does it prove the gas industry, or those leading it, to be helpless, or apathetic? Not long ago the Prime Minister bluntly told the farmers to try to do a little more themselves to improve their industry, and to depend less on political backing; and that, to us, seemed much more sensible advice. However desirable or undesirable political influence and the inevitable control by Government officials and red-tape may be, the safer, sounder, and better course is to "face the music," as practically every good business man in other lines has to do, and so handle the concern that it will be built on sounder and more lasting foundations than political influence and political "clap-trap."

GAS LIGHTING.

How easy it is to say, as some of our friends in the Press and elsewhere have been saying, that the "B.C.G.A." is ignoring gas lighting, and that therefore the losses in the lighting load must be put to that account, whereas the facts are that gas lighting will not be retained (not to speak of replacing electricity by it) by display advertisements, but only by proving to the individual user by means of intensive service and maintenance campaigns that gas is not a back number. Experiences on the Tyne and elsewhere, to our knowledge, where well-organized methods have been successfully carried out, make evident the fact that gas for lighting, in certain classes of property, as well as for street lighting and many kinds of factories and workshops, can actually be increased to the greater satisfaction of the user on account of both economy and efficiency. But it is essentially a job for local, specialized effort, and not for national general advertising. If a man has poor burners badly maintained, you will not persuade him that gas lighting is good by telling him so in any advertisement, however attractive; you must convince him by demonstration in his own home or factory.

On the subject of lighting, the "B.C.G.A." provides a unique and extensive catalogue of literature, for reference as well as for distribution, for the use of members who are really keen to go all out to safeguard and develop their lighting load.

GO FOR GREATER THINGS.

This brings me to the main thing I should like to put to you. Most of the members here represent the smaller undertakings, and you may probably feel that, if you had the handling of larger works and had greater opportunities for showing what you could do, you would promptly seize them. May I remind you that the wise optimist is the man who sees opportunities in difficulties, and profits by them? I think the "sin that so easily besets" the gas industry is the lack of appreciation of the wonderful power for service—still largely undeveloped—it holds, if we will only clear our vision to appreciate it. "Not failure, but low aim, is crime."

Spend an afternoon in looking through your ledgers, and see the miserable consumptions of gas which are mostly recorded there. Pick out twenty or more of the brightest spots, and find out why one household should be consuming so much more gas than its neighbour. This will probably do more than anything else in the world to whet your appetite for big increases, and stop the silly talk about saturation.

Here, for instance, is a delightful, but most suggestive, quotation from a book by E. V. Lucas, which I recently read on holiday. He makes an old char-lady say to a man who is trying to find out how to disburse a lot of money:

> If everyone in my street were to have a bathroom and a gas cooker, it would be all to the good. For look at it now—it's the poor who want their meals quickly and cheaply, and it's the poor who get dirtiest: but the poor have to buy coal in the dearest possible way, by the sack, because they have no cellars, and then waste it, because the fire goes on long after it's needed: and also the poor who, if they want to wash, must do it in a basin.

That, in itself, suggests a fine programme for the industry. It is a fact of which we may well be proud, that even now the poor and the working people in all our great cities depend very largely on gas service. Of nine million customers now utilizing gas, more than half are supplied by means of slot meters.

The very service suggested by the distinguished writer just quoted is probably a part of his own domestic equipment, as it is of many thousands of others; but in the provision of hot water to countless households gas has still a great undeveloped field.

VALUE RATHER THAN PRICE.

Let us continue to inculcate into the public intelligence the value and the all-round service gas renders in the home, and, while doing everything possible to get and maintain a low price, let us not be staggered in thought at average consumptions enormously greater than the present. Too often and too much, in my opinion, have we stressed the point that gas supply is "cheap," rather than the much more important salesmanship quality that it gives wonderful, all-round value.

Customers are people who have been educated to purchase certain products, and it will readily be found that sales arguments based on price alone tend to cheapen the service and the commodity in the purchaser's mind. Many marketable commodities could be reduced in price by the ruthless substitution of shoddy and inferior material, but that would be fatal to business building.

The gas industry has a striking example of this in some of the disgraceful fittings put on the market, which do the industry great harm. The question of price in making their contracts seems to be an obsession with some managers, and the unfortunate consumers on their districts have often eventually to pay dearly for it in inefficiency of result.

It is the same thing with gas itself. We are not selling, and the public do not wish to buy, gas as gas. What is wanted—and our appeals ought to be based on this fundamental fact—is good light, reliable and convenient heat for cooking, hot water, and power, and refrigeration. In other words the householder wants something which will lessen drudgery and disagreeable work, which will add to the comfort and convenience of the household, be the medium for getting more leisure and time for congenial tasks, and generally, as our advertisements say, be a woman's third hand.

The manufacturer requires clean, reliable, easily controlled

fuel which will give him better results and greater output. Reasonable people know that such services cannot be had free of cost, and many gas men would be surprised if they knew how much people actually do pay for the things they really want.

Our job is to interpret the needs of the householder, the trader, and the manufacturer, and to convince him and her, or, more essential still, her and him, that if it is heat, and comfort, and ease of control, and reliability, and a "service that never fails" that they desire, "it's gas they want." It is an inherent part of human nature, when it is running on healthy lines, to be ever seeking something better; and the prospective buyer must be persuaded into believing that the product has other advantages than mere cheapness.

Will the public pay the price? Assuredly, or why the demand for better houses, better furniture, better cars, better standards in every walk of life Cynics may sneer at the artificial silk craze, and say that, of course, if a lady pays 12s. 11d. for a pair of silk stockings, she will certainly want to show at least 11s. worth of them, but the real reason is that the modern woman wants to look as well as possible; and good luck to her! Men should try to remember that it is only at sale times that a woman boasts of how cheaply she bought certain goods.

What I am trying to get at is that we all tend to limit the possibilities for development in sales by our small conception of possibilities; we need bigger and wider horizons, and more practical vision. Face competition, compare with the programme of any other public utility, the services—domestic, commercial, and national—which the gas industry provides, and, without complacency, we shall be more than ever convinced that we are only now touching the fringe of national possibilities. Someone was recently reported to have said, truthfully, "There is nothing that succeeds like success, and there is no advertising so convincing as the tale of huge sales, or in other words, the tale of success."

Achievement.

Achievement, in any sphere, is encouraging and stimulating; and, therefore, without seeking to claim (though such a claim would in many of the cases quoted be readily admitted) that "B.C.G.A." work and influence lie behind the business, I wish to give you a very brief synopsis of some of the big things that gas is doing to-day. We frequently hear the statement made that the gas industry is entering on a new era of useful activity, particularly in the industrial field. The following illustrations surely justify the truth of such an assertion.

Some people are, perhaps, like the Scotsman who went to the captain of the ship in trouble when they were sending up signals of distress, and said: "I'm the last man to try to put a damper on anything, but do you really think this is a time for letting off fireworks?" I will give you, not fireworks merely, but facts, taken from various districts, and touching a variety of activities.

The "Daily Mail."

As a practical ally to that most powerful of all public influences in moulding and influencing opinion—the Press—gas plays an important part. It is essential in the production of all the big London and Provincial daily newspapers, and in times of acute industrial crisis has proved as safe and reliable as it has always done in the simpler domestic duties which it has been performing for a century. As "the one public utility that never fails," the newspaper world, depending as it does on prompt and reliable circulation, out to the minute, is now glad to avail itself of its service. A striking example of the gas equipment required in the production of the "Daily Mail" in London, not to speak of editions in other parts of the country, is as follows:

> Six 3000 c.ft. high-capacity meters in two batteries of three for the main general supply for the building. Check meters will be added to this from time to time for such apparatus as canteen, small foundry, process department, &c.
>
> Gas supplies of 4 in., 3 in., and 2 in. have been run to the rotary plate casting foundry, where five 7-ton linotype junior "autoplate" casting furnaces are installed. The five furnaces use approximately 5000 c.ft. of gas per hour, and it is estimated that the ultimate total demand will be in the region of 7500 to 8000 c.ft. per hour.

Hospitals.

Take another great side of modern civilization, and this time very largely associated with public health—the modern hospital. The yearly consumptions of three of the largest London hospitals are as follows:

St. Thomas's Hospital	30,235,000 c.ft.
Westminster Hospital	11,011,000 c.ft.
St. Bartholomew's	13,518,000 c.ft.

> St. Bartholomew's have placed an order for heating the whole of the wards within three years. As part of this contract has now been completed, it is estimated that this will mean an additional consumption of 13 million c.ft. a year.

A fact of considerable significance is that in St. Thomas's Hospital, after the most complete practical tests, an electric kitchen has been re-equipped with an all-gas installation.

With such figures in front of us, is it any wonder that, as an industry, we can and do truthfully claim that gas service is healthy, and practically indispensable to modern life?

In Industry.

As an illustration of the part gas plays in railway engineering, it may be stated that the Great Western Railway, in their Swindon Works, use 3 million c.ft. per day. This is typical of all the railways.

One firm producing aluminium castings use no less than 150 million c.ft. of gas per annum; while a motor gear company consume nearly 28 million c.ft. annually. At the Morris car works, over 50 million c.ft. of gas is consumed annually in the manufacture of the most popular mass production car in the United Kingdom.

Housing.

Time and space would fail if I seriously tried to widen the scope of illustration. Housing, for instance, would need an address and discussion for itself. Here are only the briefest details of a few schemes:

In a recent Glasgow housing scheme, out of 16,777 houses, 16,084 (or 95·27 p.ct.) were equipped for gas cooking, water heating, and room heating.

In Liverpool, where 13,000 houses have been erected, gas is installed in 98 p.ct. for cooking and 91 p.ct. for wash-coppers. No fewer than 20,000 gas fires will be in use in that city's housing scheme.

In one London scheme alone, comprising 28,500 houses, gas is installed throughout for cooking and for lighting in over 22,000 of them.

J. Lyons & Co., Ltd.

No better sample of modern gas equipment could be mentioned than the services of Messrs. J. Lyons & Co., Ltd., as the most famous firm of caterers in the world, doing an enormous business in a most efficient and creditable manner. The fact that Lyons find gas essential "for getting the work done" is an outstanding fact. In one of their London restaurants they actually consume as much gas as would suffice for the ordinary needs of 10,000 people, while their total consumption of gas would be sufficient for a town with a population of 100,000 inhabitants.

Encouragement.

I may be criticized for bringing this "salesmanship stuff" into a statement on "B.C.G.A." work, but I have done so for two reasons—one because, with so much talk of competition and political influence in the air, some of our members (especially in smaller places where they have not been "up against it") might be getting discouraged; and secondly, that these "plums"—or "carrots" if you like the simile better—to which I have just referred may make us, remembering the possibilities for usefulness we hold, press on with good heart. Many of the finest examples of big business in the gas industry to-day are largely the result of patient, faithful, persistent work in the past, by men whose names may be forgotten, but whose good work abides.

Acknowledgments.

Mr. J. M'Nicholl (Cork) said he did not think anything could usefully be added to what Mr. Fottrell and Mr. Mason had already told them. The addresses had been sufficient to convince anyone of the advantages accruing from the activities of the National Gas Council and the British Commercial Gas Association. Both organizations were essential to the full development of the industry. He proposed a very hearty vote of thanks to the authors for the trouble they had taken to come over to Ireland and deliver the addresses.

Mr. A. S. Brook (Lisburn) seconded the vote, which was carried with applause, and acknowledged by Mr. Fottrell and Mr. Mason.

This brought the proceedings to a close.

Large Waterless Holder for Edinburgh.—The Edinburgh Corporation have placed an order with Messrs. Robert Dempster & Sons, Ltd., of Elland, for a waterless gasholder of a capacity of 5 million c.ft. The diameter is 176 ft., and the height 235 ft., and the holder gives a constant pressure of 12 in. The contract includes the foundations of the holder, which is to be erected at the Granton Gas-Works. At the present time a 3 million c.ft. waterless holder is being partially assembled at Messrs. Dempster's works, Elland, prior to shipment to Vancouver, B.C.; this holder being arranged for erection on steel joists and concrete piers, the headroom being 12 ft. The space underneath will be available for use as stores.

POTENTIAL INVESTMENTS.

XIV.—THE DERBY GAS LIGHT AND COKE COMPANY.

The Derby Gas Light and Coke Company was incorporated by Special Act in the year 1820, and further powers were obtained between the years 1852 and 1923. Offices: Friar Gate, Derby. The statutory area of supply covers 100 square miles, and comprises Derby, Belper, Milford, Spondon, Ockbrook and Borrowash, Duffield, Allestree and Quarndon, Mickleover, and Etwall. The population of the area is about 160,000, and the number of consumers 43,586.

The capital of the Company as shown by the last accounts (Dec. 31, 1927) is as follows:

Capital Stock.

	£
Consolidated ordinary (5 p.c.)	492,270
Remaining to be issued	97,000
Total amount authorized	£589,270

Loan Capital.

	£
4 p.c. perpetual debenture stock	55,000
Remaining to be issued	51,017
Total amount authorized	£106,017

Premiums received, £69,635.

Transfer Arrangements.—Common form. Fee for registration of transfer, probate, marriage, or distringas, 2s. 6d.; death in joint holdings or power of attorney, *nil*. Both classes of stock can be transferred on the same deed (without extra fee) and in amounts and multiples of £5; smallest holding allowed of ordinary stock, £10. Husband's witness of wife's signature or *vice versa* not accepted.

Voting.—One vote for every £25 capital stock up to £100, one for every £50 beyond up to £1000, and one for every £100 beyond. Directors' qualification, £1000 capital stock.

Accounts and Dividends.—Accounts are made up to Dec. 31 and submitted in February, an interim dividend being paid in August. The standard price of gas is 1s. 1½d. per therm; present price 7d. per therm for lighting, &c., and for industrial purposes 6d. per therm, less discount from 2½ p.c. to 10 p.c. on quantity used; declared calorific value 500 B.Th.U. per c.ft. Dividends on the ordinary stock are subject to sliding-scale—viz., ½d. per therm above or below the standard price equals ⅛ p.c. in half-year's dividend.

The following table illustrates the progress made by the Company prior to the war and during the past five years. The years 1914 to 1922 are purposely ignored owing to the abnormal conditions then prevailing.

Year.	Average Gross Selling Price of Gas per 1000 C.Ft.	Quantity Sold. Thousands C.Ft.	Capital Employed per 1000 C.Ft. Sold.	Gross Profit.	Total Charge for Capital. (*)	Rates of Dividend. P.Ct. per Annum on Maximum Dividend Stocks.	Amount Carried Forward and Balance Reserve Fund.
	s. d.		s. d.	£	£	£ s. d.	£
1903	2 8	554,514	14 8	28,286	28,462	10 0 0 7 0 0 5 0 0 Rate on Converted Stock.	37,998
1908	2 3	849,135	11 2	36,147	28,648	5 10 0	34,440
1913	2 0	1,027,175	9 4	35,448	30,892	6 0 0	89,765
	Per Therm. d.	Therms.	Per Therm. s. d.				
1923	8·25	6,859,468	1 5	72,608	36,591	7 10 0	170,989
1924	7·5	7,552,610	1 4	54,371	36,770	7 10 0	170,561
1925	7·5	7,904,515	1 4	56,064	37,426	7 10 0	170,951
1926	7·5	8,150,441	1 4	39,720	38,244	7 10 0	174,371
1927	7·5	8,490,320	1 4	57,900	43,304	8 10 0	195,777

* The total charge for capital includes dividend and interest and amount (if any) carried to reserve fund.

NOTE.—Under the Company's Special Act of 1903, the 10 p.c. and 7 p.c. maximum dividend stocks were converted into 5 p.c. ordinary stock in £10 holdings.

The strength of the Company is plainly revealed by the above figures. The combination of a low selling price and low capital with such excellent reserves is rarely to be found. The gas sold during the past year shows an increase as compared with the year 1903 of nearly 210 p.c., the extension of sales during the past four years being 24 p.c.

The Consolidated ordinary stock is quoted on the Nottingham Exchange. The stock is closely held, and very few transactions are recorded. In January of last year the quotation was 107-109, but subsequently it fell to 103-105. Attention having been drawn to the fact that the stock was undervalued, the price has been advanced to 115-120, at which price it is still a very attractive investment; the yield on the average price being just over 7 p.c.

EXPERIENCES IN INDUSTRIAL GAS SURVEY ENGINEERING.

By G. W. ALLEN, of Toronto.

[From a Paper before the Canadian Gas Association.]

Like any other business, we have reached a point where it is absolutely necessary that we demonstrate what our product can do for those people willing to use it; and in my own experience while lately in personal contact with over 689 industrial and commercial firms, it has been revealed that almost 90 p.c. of the business heads of these establishments are willing to use gas in their various heating operations if the gas companies are willing on their part to demonstrate its possibilities as a fuel.

Personally, I think the attitude of the manufacturer is a sane one, for if we have faith in what gas can do in certain given circumstances, we ought to be willing and ready to demonstrate the fact.

There seems to have been too much of the "waiting for customers to come and buy" attitude expressed by our gas company friends; and while some have come to realize the truth, and are taking steps to remedy it, on the other hand many are still doing but little to get the business which, after all, is the only kind of business that will ever assist us to reduce gas bills.

One good average industrial customer is worth or equal to 500 or 1000 domestic consumers. Obviously the overhead, all things considered, is much less on one wholesale consumer than on the larger number of domestic users with their small monthly demands.

To make a detailed survey of all the processes now carried on in the business houses of four of our Canadian cities within the past two years, and to report on the possibilities of applying gas fuel to each of the heating operations revealed in the 689 establishments visited, is a work of considerable magnitude and importance; and some of the things brought to light ought to have a measure of interest to each of us engaged in this kind of new business.

That it is an engineering work goes without saying, for, when properly understood, industrial gas surveys can only be successful when undertaken by men who have a fair knowledge of every process carried on in industry to-day. It is not meant by this that every man following up industrial business should be some sort of superman, and understand everything there is to know about industrial fuels, but it does mean that the man who is employed to make the preliminary surveys, and the manager in charge of the new business department, should have a fair grasp of this important business development.

FINDING NEW SALES OUTLETS FOR GAS.

Industrial surveys are expressly for the purpose of revealing new outlets and possibilities for gas fuel; and while at the outset they are not intended to bring about immediate increases in gas demand, they nevertheless become the first steps in the correct understanding of what the local gas man himself is up against in his endeavour to get this business. An industrial survey is then in very truth what it is expressly intended to be—that is, for the gas manager's own benefit. Knowing what he is up against, he is in a much better position than he otherwise would be to institute ways and means for going after business now held by other fuels.

It is practically impossible for any new business manager to have a detailed knowledge of every one of the 21,000 processes now supposed to be successfully carried on with gas as the heating fuel, but this does not excuse him from failure to adopt a system in his own office that would keep him and others posted on what is being done, and, in many instances, how it is being done in other places and institutions throughout the country.

This, then, is where the Industrial Fuel Engineering Information Bureau comes in. With such a bureau properly built up and constantly supplied with the necessary data and information, it becomes a much easier matter for the manager to handle the subject of industrial heating whenever it does come up for attention.

By means of such a bureau the local manager is in a position to aid manufacturers with their various heating problems, and he is thought more of by these same business men when

they see that he has a fair grasp of this important phase of gas sales work.

NEED FOR CONFIDENCE.

Industrial surveys have been given considerable thought of late, and industrial survey engineering, if you like to call it that, is becoming practically a business of its own. It has reached proportions of late where it has become a difficult matter to obtain men skilled enough and with courage enough to go out and meet every kind of plant manager, meet him on his own ground, and to be of some assistance to him in his own efforts to increase the efficiency of his production methods. The writer's experience has proved that local gas companies have gained the greatest prestige in the eyes of the managers of industrial and commercial concerns where and when the gas surveys have been put through by other than their own men. Plant managers seem to lack confidence in the ability of gas company employees to understand their particular heating problems. This is, however, only so in such cities and towns where the local gas departments have never made much effort to get this kind of business, or who have never acquainted their industrial concerns with the fact that they are willing and ready to co-operate with manufacturers in their various heating processes.

To show the value of industrial surveys, I would particularly mention that when all the reports were analyzed covering the heating processes carried on in the shops of four Canadian cities, Kingston, Guelph, St. Thomas (Ontario), and Sherbrooke (Quebec), there was revealed an actual desire on the part of over 33 p.ct. of the industries visited to use gas in their processes, provided the gas departments were willing to demonstrate what gas could do. About 10 p.ct of immediate business was also located apart from any rate question entering into the transaction. The only difficulty experienced was in the local company's inability immediately to follow up the business, owing to lack of men properly trained for this important work. However, all these cities mentioned have made or are making progress on the preliminary follow-up required, and have expressed their desire to go right ahead with the establishment of the first step in the plan—that of organizing an industrial fuel information bureau.

The surveys also revealed the fact that but few of the managers and superintendents of the industrial and commercial establishments called upon were aware of the great strides being made along industrial gas development, or were acquainted with the modern type of gas heating equipment now obtainable for successfully handling their special line of work.

It was also revealed in a more general survey made recently that the highest gas rates prevail in cities where the domestic load predominates, and where there is not a uniform demand for gas at all seasons of the year. Cities having the lowest rates in force were those enjoying a fair balance of both lines of business—domestic and industrial.

It is therefore obvious that the gas companies who want the enjoyment of lower rates should take steps towards developing that demand which costs the least to handle once it is obtained —that is, the industrial load. To accomplish this it is necessary to arrange for a preliminary industrial survey of the possibilities ahead. A survey of this kind reveals all the possible outlets for gas in factories, foundries, machine shops, hotels, restaurants, cafés, confectioners, bakeries, hospitals, colleges, and institutions. Individual reports covering each place visited, if properly made out, will show every present heating process carried on in the establishment; will show kinds, quantities, and costs of present fuels in use; and the various overhead expenses applicable thereto, although even here there is a woeful lack of information available on the part of the operators and managers, who in many cases just lump their various fuel costs, and cannot definitely state what an individual appliance is costing in the way of fuel. The individual reports also contain information as to whether gas fuel could be adopted, and at what rate it should be sold supposing that the latest type of equipment available for the process was in use. All the various delays, uncertain results, and varying temperatures incidental to fuels at present employed, are also listed. With such reports properly followed up by the local gas department, there cannot help but be a steady increased gas business following.

PUBLICITY.

In advance of making a survey, some form of newspaper announcement, coupled with a letter to each manager and plant superintendent, should be employed. This should draw attention to the fact that the gas department is about to make a survey for the future benefit of local industry, and with the object of later on bringing about lower gas rates. It is also hoped they will give the visiting engineer the privilege of making an inspection of their heating operations, to the end that first-hand information may be obtained as to whether gas fuel could be applied to the process to the mutual benefit of the manufacturer and the gas department. The announcements should also stress the importance of the industrial fuel information bureau which the gas department is establishing as a means of aiding manufacturers and others to greater heating efficiency in industry.

In the writer's visit to the 689 business establishments already mentioned, he received the greatest of courtesy at the hands of the managers, plant superintendents, master mechanics, and others, and every effort was put forth by these men to demonstrate what they were doing with various kinds of fuels. Only in few exceptions was there any pessimism shown towards gas as a fuel. In the several large locomotive shops visited, the steel and iron foundries, the general manufacturing establishments, the hotels, restaurants, bakeries, dairies, and other business houses called on during the surveys, there was expressed a keen interest in the more modern development of gas; and these firms expressed a hope that the local gas companies would soon be in a position to demonstrate the efficiencies of gas fuel.

Our larger gas companies have proved the value of industrial gas business, and these have been the envy of the smaller gas plant; but the smaller towns and cities can do a great deal towards getting some of this business, if they will only have courage and go after it.

PRESENTATION TO MR. A. M. PADDON.

This photograph was taken on Aug. 13, when Mr. A M. PADDON, Chairman of the North Middlesex Gas Company, was presented by the co-partners of the Company with a silver inkstand and an illuminated address. The ceremony took place in the meter house at the Company's works at Mill Hill, in the presence of a large gathering ; and a full account of the event will be found on p. 416 of our issue to-day.

LOW-TEMPERATURE CARBONIZATION.

A "K.S.G." PLANT AT WORK.

Extracts from the Report of the Tar, Benzole, and Bye-Products Committee of the Association Technique, presented at the recent Annual Meeting.]

The first part of this report is devoted to a discussion on the debenzolization of washing oil and to the results of a modern installation; the subject being of special interest to our French colleagues in view of the compulsory recovery of benzole in their country. The second part of the report deals with low-temperature carbonization, analyzing and classifying the various processes, and discussing the characteristics of the products, solid, liquid, and gaseous.

SEMI-COKE FOR WATER-GAS MANUFACTURE.

A long section of this part examines the question of what use the gas industry could make of the products if low-temperature carbonizing was admitted into its cycle of operations. Regarding the semi-coke, the Committee point out that its high reactivity makes it an excellent primary material for gasification. If the semi-coke is in pieces and sufficiently cohesive, there is no reason why it should not be used in a water gas plant; and, indeed, complete gasification plants provide a precedent, for in its passage therethrough the coal attains just that suitable state. If, on the other hand, the semi-coke is in pulverized form, then gasification is a more difficult job; but numerous processes have been put forward, among which one may cite the following: (*a*) The Clauss process, in which the fuel is steamed in an externally heated chamber; (*b*) the Burditt and Klottzer processes, which are based on a similar principle; and (*c*) the Balley process, in which pulverized fuel and steam are driven against refractory chequer-work raised to a high temperature, the refractories being heated by the combustion of a portion of the gas produced. Unfortunately the low thermal efficiency of these systems and the necessity for the employment of homogeneous pulverized fuel have hindered their development.

Of greater interest is a German process quite recently brought into being by the I.G. Farbenindustrie. In this the gas generator is in the form of a very large chamber charged with fines and dust. The blow is carried out by air at a temperature of 600° to 700° C., and at a pressure high enough to cause violent agitation of the fuel bed, which obviates localization of combustion and uniformly raises the temperature of the whole. When the temperature reaches 1100° to 1200° C., steam is injected under similar conditions—that is to say, at a sufficient pressure to keep the coal on the move. This process presents the advantage that perfect pulverization, which is a costly factor, need not be insisted upon. In addition, the plant takes up but little room; it being reckoned that three metric tons per hour can be gasified per sq. m. of grate area. The gas produced contains roughly 43 p.ct. of CO, 45 p.ct. of hydrogen, 2·5 p.ct. of CO_2, and the balance nitrogen. At the Badische Anilin Works, the plant is treating 1800 to 2000 metric tons of lignite semi-coke per 24 hours.

A LARGE "K.S.G." PLANT FOR AMERICA.

The Committee call attention to a large plant which is under construction by the International Combustion Engineering Corporation near New Brunswick, New Jersey, U.S. There it is intended to carbonize 500 metric tons of coal per day in a "K.S.G." (Kohlenscheidungs Gesellschaft) plant, which will comprise a setting of eight retorts. One retort will always be laid-off; and the estimated daily make is some 350 tonnes of semi-coke, 60 tons of liquid products, and 50,000 cub.m. of 7000 cal. gas [1¾ million c.ft. of 787 B.Th.U.]. The liquid products from high-volatile American coals are reckoned to be 110 kg. of tar and 10 kg. of light spirit per tonne.

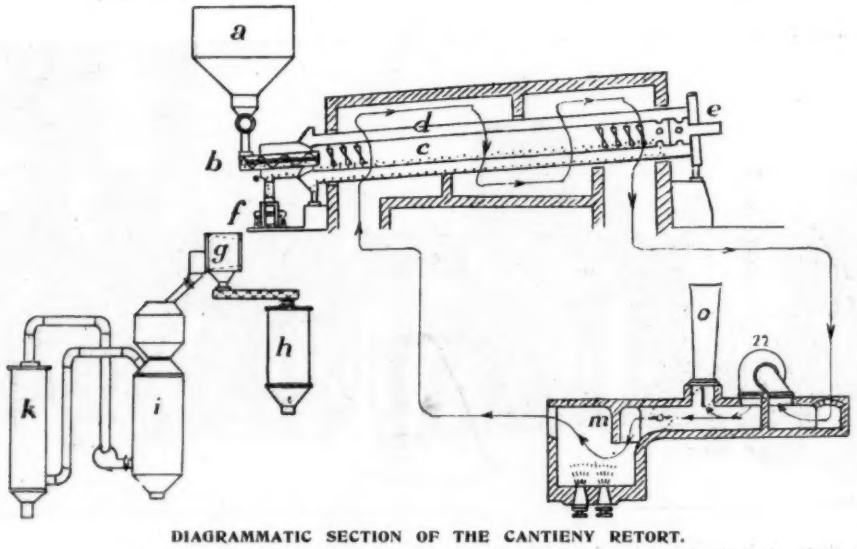
The rich gas will be mixed with approximately its own volume of 2600 cal. [292 B.Th.U.] gas made in two producers fed with low-grade coal. The whole output of gas—about 90,000 cub.m. of 4600 cal. [3,178,000 c.ft. of 517 B.Th.U.]—will be sold to the New Brunswick Public Service Electric and Gas Company. The installation is expected to commence work in 1929.

A 60-TON "K.S.G." PLANT AT WORK.

The "K.S.G." plant at the Karnap Works of Mathias Stinnes comprises essentially two concentric rotatable cylinders some 20 m. in length, and inclined at 5° to the horizontal. The inside cylinder, which is 1·7 m. in diameter, is kept at a temperature of 200° to 300° C.; and the external cylinder, 3 m. in diameter, at a temperature of 600° to 700° C. The coal from the hopper is fed to the lower end of the inside cylinder by an endless screw, and is propelled up the cylinder by a rotating helix. During this passage, it is progressively heated, and arrives in a dry state at the higher end of the cylinder at a temperature of 250° C. Thence the coal drops into the outside cylinder and meets a temperature of 600° C. There it is carried down by gravity in the smooth annular space between the two cylinders; and at the end of the return travel it has been carbonized to semi-coke. The cycle is completed in 2½ hours. The semi-coke is raised into the discharging chamber by radial fins; the actual discharging taking place on the same side of the apparatus as the charging. The gas offtake is at the upper end of the machine.

The moving parts are of steel; and the cylinders are supported at each end by groups of rollers, which run on rails fixed to the interior, and cooler, cylinder. The latter is the longer of the two; and the general design assures the maximum mechanical strength. Expansions of the outer cylinder are allowed for by a stuffing box arrangement between the two cylinders at the higher end.

The actual carbonization of the coal is carried out by a small quantity (5 p.ct.) of steam superheated to 400° C.; and the heating of the retort is by low-value gas, which is combusted in a separate chamber near the retort, but not integral with the actual setting. The latter is a brick structure provided with baffles to direct the combustion gases round the cylinders, as is roughly indicated in the accompanying drawing. The temperature of the heating gases is regulated by withdrawing a proportion of them and putting them



DIAGRAMMATIC SECTION OF THE CANTIENY RETORT.

a Coal hopper.	*f* Dust trap.	*k* Coke cooling system.
b Coal feed.	*g* Coke screen.	*m* Combustion chamber.
c, *d* Retort.	*h* Cooler for small coke.	*n* Fan.
e Gas offtake.	*i* Cooler for large coke.	*o* Stack.

back into the circuit. Further regulation of the temperature can be effected by varying the amount of steam injected. Pyrometers in the side walls of the setting allow close observation of the temperature, which must not pass 750° C. The retort makes one revolution in 90 seconds; the motive power being an 8 H.P. motor.

The Karnap installation has been at work since 1924. The retort itself in the first instance was riveted, and could not stand up to the conditions; but the original one was substituted by a seamless welded retort, which has been in service for more than a year, and has given good results. It is pointed out that at temperatures of 600° to 700° C. the metal plates of the outside cylinder have a mechanical strength of only about a quarter the normal; and this accounts for the buckling difficulty. As for the inside cylinder, this is not actually in contact with the heating gases, and in addition it is continually receiving the fresh cool coal; and no difficulties have been met with in its construction.

On leaving the retort, the semi-coke negotiates a dust trap, from which it emerges at a temperature of 350° C. It then undergoes preliminary screening into two parts; the small coke being sent direct to a hopper without further quenching (it cools quickly enough in the air), while the big coke is dry-quenched in a Sulzer plant. The retort gases are sent through a cyclone dust remover (this is in duplicate, as cleaning is required after 24 hours), then through three condensers, and finally through two washers in parallel. The heating gas for the setting is supplied by a producer working on semi-coke breeze.

RESULTS.

The coals carbonized are chiefly Ruhr smalls crushed to pass 2·5 mm. On an average, the moisture content is 1 to 3 p.ct., volatiles 22 to 25 p.ct., ash 14 to 15 p.ct. As for the product, the conditions of coking result in semi-coke in pieces of good commercial size—namely, 5 to 10 cm.; and it is noted that a large proportion of the dust seems to be agglomerated in the pieces instead of getting mixed with the liquid products. If the coal in working appears to be too sticky, if the semi-coke is coming off in pieces too large, or if there is any trouble with hanging-up in the retort, a proportion of semi-coke breeze is added to the coal. This addition has the further good effect of dividing up the coal mass and so assisting in the release of the volatiles. The setting is dealing with 60 to 70 metric tons per day; and for heating the retort, the semi-coke breeze supplied to the producer is 10 p.ct. of the coal distilled.

The distillation gases on leaving the annulus, where they deposit the greater part of the dust, mix outside the drum with the gases coming from the inside cylinder, which are composed mostly of steam and the more volatile hydrocarbons. A small pressure is kept in the retort at the point of coal ingress, and a light vacuum is maintained at the gas offtake. It should be noted that the injection of superheated steam prevents the rapid cooling of the gas, and so obviates any awkward deposition of tar at the offtake and in adjacent pipes.

The above conditions of working give the following yields:

	Per Tonne.		Per Ton.
Gas	70— 80 cub.m.	..	2510—2870 c.ft.
Tar	50— 60 kg.	..	..
Semi-coke	800—830 kg.	..	1800—1868 lbs.

THE PRODUCTS.

The gas has a calorific value of 7000 to 8000 cal. per cub.m. [787 to 900 B.Th.U. per c.ft.]; and per tonne of coal carbonized 5 kg. of benzene, density 0·78, are obtained. The rich gas is mixed with coke oven gas of calorific value 4300 cal., so as to reach the prescribed figure of 4500 cal. per cub.m. [506 B.Th.U. per c.ft.].

The tar, which is of very low viscosity, contains from 3 to 7 p.ct. of free carbon, and has the following average composition:

Benzene	15 p.ct.
Oils	50 p.ct. (of which 20 p.ct. is phenolic)
Pitch and paraffin	35 p.ct.

In the aggregate, the benzene recovered from the gas and the tar amounts to 10 to 12 litres per metric ton of coal [2¼ to 2⅞ gallons per ton]. The tar is sold to a distillery; the phenols being returned to the Matthias Stinnes factory for working up into pharmaceutical preparations. The point is emphasized that the low-temperature tar is never mixed with the coke oven bye-product from the works.

As for the solid product, the semi-coke has a calorific value of 7200 cal. per kg. [12,950 B.Th.U. per lb.], and it screens roughly as follows: 35 p.ct. is 40 to 90 mm.; 35 p.ct., 20 to 40 mm.; and 30 p.ct. the balance. The greater the addition of semi-coke to the charge, the lighter and the harder is the product; and these qualities also vary in direct proportion to the amount of steam injected.

A ready domestic market exists for the smokeless fuel; and the prices obtainable are given compared with those of other solid fuels:

—	Per 50 Kg.	Per Ton.
	Marks.	s. d.
Anthracite	3·15	65 6
Semi-coke beans	2.10	43 8
Semi-coke large	1.80	37 6
Metallurgical coke	2.90	60 4
Gas coke, graded	1.85	38 6
" " ungraded	1.70	35 4
" " broken	1.60	33 3

The following table gives analyses of the "K.S.G." products:

Analysis of Samples.

	Original. P.Ct.		Air-Dried at 100° C. P.Ct.
COAL—			
Moisture	1·04	..	..
Volatiles	22·04	..	22·27
Fixed carbon	63·15	..	63·82
Ash	13·77	..	13·91
Coke	76·92	..	77·73
TAR—			
Density	1·07 at 20° C.		
Free carbon	2·45 p.ct.		
BENZOLE—			
Density	0·798 at 15° C.		
	Original. P.Ct.		Air-Dried at 100° C. P.Ct.
COKE—			
Moisture	1·28	..	..
Volatiles	10·82	..	10·96
Ash	14·69	..	14·88

CORRESPONDENCE.

[*We are not responsible for opinions expressed by Correspondents.*]

Education Scheme: Advice to Students.

SIR,—Inquiries are already pouring in from prospective students with regard to the next winter session's classes in Gas Engineering, Gas Supply, Gas-Works Practice, Gas Supply Practice, and Gas Fitting.

The attention, therefore, of all students who are not within reasonable distance of one of the 33 technical institutes having approved Major Courses, or the 23 having approved Minor Courses, and who wish for advice as to their studies, is directed to the fact that "Forms of Application for Advice" may be obtained from any of the District Secretaries whose names are given below. These forms have been drawn up with a view to reducing correspondence by eliciting the precise difficulties encountered, and the precise present attainments of the applicants, both of which must be known before proper advice can be given. Students who are within reach of technical institutes having approved Courses—a list of which is appended—in the appropriate subjects, should, of course, apply to the Principal for enrolment in the usual way.

In order to remove a misconception which has again cropped up in connection with next winter's work, may I re-state the position with regard to external students entering for examination under Section 2 of the Education Scheme. It is obvious that with only 33 technical institutes having approved Courses, there must be large areas in the country where students cannot obtain class tuition in Gas Engineering or Gas Supply. Any student, therefore, who can satisfy the Gas Education Committee that for geographical reasons it is impossible for him to attend classes at one of these 33 centres, and who at the same time can furnish proof of an adequate study of suitable science subjects at an approved technical institute, and who can comply with the other requirements (see p. 19 of the Revised Regulations, dated Sept. 13, 1927) may be admitted to the examinations. In order to prepare for the examinations in Gas Engineering and Gas Supply, such student must clearly rely upon private study, or private coaching, or secure tuition in any other way which may be available for him. No questions are asked by the Committee as to how or where such tuition has been obtained.

WALTER HOLE,
Organizing Secretary.

Cliff Haven,
Redclyffe Park,
St. Marychurch, Torquay,
Aug. 17, 1928.

The names and lists referred to are printed overleaf.

LIST OF DISTRICT COMMITTEES WITH NAMES OF CHAIRMAN AND SECRETARY.

District.	Chairman.	Secretary.
Eastern	F. Prentice	E. F. Keable, Engineer and Manager, Gas-Works, Southtown, Great Yarmouth.
Irish	J. D. Smith	G. Airth, Gas-Works, Dundalk.
Lancashire	S. Tagg	J. Alsop, Gas-Works, Bolton.
Midland	F. C. Briggs	H. R. Hems, Gas Department, Council House, Birmingham.
North of England	C. Dru Drury	H. Lees, J.P., Gas Office, Hexham.
Scottish	Dr. T. Gray	David Fulton, Gas-Works, Helensburgh.
Southern (S.E.)	L. Trewby	T. H. Prater, 25, Invicta Road, Margate.
Southern (S.W.)	S. Robertson	S. Hole, Gas-Works, Bath.
Wales	H. D. Madden	O. Thomas, Gas-Works, Pentre, Rhondda.
Yorkshire	J. Bridge	C. H. Chester, Gas-Works, Wakefield.

LIST OF CENTRES HAVING APPROVED MAJOR COURSES IN GAS SUBJECTS.

O.E. = Ordinary Grade Gas Engineering.
H.E. = Higher Grade Gas Engineering.
O.S. = Ordinary Grade Gas Supply.
H.S. = Higher Grade Gas Supply.

Bath Technical College	O.E.	H.E.	O.S.	—
Barnsley Technical College	O.E.	—	—	—
Birmingham Technical College	O.E.	H.E.	O.S.	H.S.
Blackburn Technical College	O.E.	H.E.	—	—
Bournemouth Municipal College	O.E.	—	—	—
Bradford Technical College	O.E.	H.E.	O.S.	H.S.
Bristol Merchant Venturers' Technical College	O.E.	—	O.S.	—
Burnley Technical College	O.E.	—	—	—
Cardiff Technical College	O.E.	H.E.	O.S.	H.S.
Coventry Technical College	O.E.*	—	—	—
Derby Technical College	O.E.	H.E.	—	—
Dewsbury Technical College	O.E.	—	—	—
Dundee Technical College	O.E.	H.E.	O.S.	H.S.
Edinburgh Heriot-Watt College	O.E.	H.E.	O.S.	H.S.
Glasgow Royal Technical College	O.E.	H.E.	O.S.	H.S.
Halifax Technical College	O.E.	—	—	—
Hull Technical College	O.E.	—	O.S.	—
Huddersfield Technical College	O.E.	H.E.	O.S.	H.S.
Leeds Technical College	O.E.	H.E.	O.S.	—
London—				
East Ham Technical College	O.E.	—	O.S.	—
Polytechnic, Regent Street	O.E.	H.E.	—	—
,, Tottenham	—	—	O.S.	—
Sir John Cass Technical Institute	O.E.	—	—	—
Westminster Technical Institute	O.E.	—	O.S.	H.S.
Liverpool Technical School	O.E.	H.E.	—	—
Luton Evening Institute	O.E.	—	O.S.†	—
Manchester College of Technology	O.E.	H.E.	O.S.	—
Plymouth Technical College	O.E.	—	—	—
Salford Royal Technical College	O.E.	H.E.	O.S.	H.S.
Southampton University College	O.E.	—	O.S.	—
Stoke-on-Trent Technical College	O.E.	—	—	—
Wigan Technical College	O.E.	—	—	—
Wolverhampton Technical College	O.E.	—	O.S.	—

* First two years of course. † Ancillary subjects only.

LIST OF CENTRES HAVING APPROVED MINOR GROUPED COURSES IN GAS-WORKS PRACTICE, GAS SUPPLY PRACTICE, AND APPROVED COURSES IN GAS FITTING.

Gas-Works Practice.

Bath Municipal Technical College.

Gas Supply Practice.

Bath Municipal Technical College.
Birmingham Central Technical College.
Cardiff Technical College.
London :—
Acton and Chiswick Polytechnic.
Borough Polytechnic.
East Ham Technical College.
Hackney Institute.
Tottenham Polytechnic.
Westminster Technical Institute.
Newcastle-upon-Tyne—Rutherford College.
Tunbridge Wells Technical Institute.

Gas Fitting.

Birmingham Central Technical College.
Bournemouth Municipal College.
Dudley Technical College.
Eastbourne Technical Evening School.
Exeter Gas Light and Coke Company.
Leamington Spa Technical School.
Leicester College of Technology.
London :—
Croydon Central Polytechnic.
East Ham Technical College.
Finchley Evening Institute.
Hackney Institute.
Tottenham Polytechnic.
Watson House, Nine Elms Lane.
Westminster Technical Institute.
Newcastle-upon-Tyne—Rutherford College.
Ramsgate Technical Institute.
Tunbridge Wells Technical Institute.
Wolverhampton Technical College.
West Bromwich (Kenrick) Technical College.
Weston-super-Mare School of Science and Art.

REGISTER OF PATENTS.

Coke Separator.—No. 293,137.

HARTLEY, J. W., of Stone.

No. 9249; April 4, 1927.

This invention relates to apparatus for separating materials of different density such as coke from clinker, breeze, and the like. The patentee refers to apparatus with a water tank divided into upper and lower compartments communicating through a slot, a bucket wheel conveyor being arranged in the upper compartment adjacent to the slot, and an endless conveyor in the lower compartment. He points out that such apparatus is not so efficient on wet coke and clinker as on dry coke and clinker, and that owing to the gritty water in the tank, the accumulation of sludge, and the liability of dense pieces of material jamming the conveyors, there is danger of damage.

The object of the present invention is to avoid these difficulties, and accordingly it provides as follows: An upward current of water is maintained at a position adjacent to the bucket wheel conveyor (usually termed a raff wheel) where the lighter material is removed by the raff wheel and separated from the denser material, which passes down to the elevator. A partly perforated partition, conforming in shape partly to the under side of the raff wheel, is so mounted that in the event of an obstruction tending to jam the wheel it will yield and allow the obstruction to escape. A grating is also provided at the separating position, and this is preferably oscillated in synchronism with the passage of the buckets in front of it, and works in conjunction with the upward water current.

The elevator for discharging the clinker has its lower bearing supported by means which permit of its being easily raised for inspection and readily replaced after repair; and the tank is also provided with an inspection door to facilitate cleaning and repairs.

Controllers.—No. 293,714.

HORSTMANN GEAR COMPANY, LTD., and HORSTMANN, A., both of Bath.

No. 9674; April 8, 1927.

Commenting upon one well-known form of lighting controller, the patentees say: Taking a plug or gas cock used in conjunction with a gas controller as an instance—to the face of the plug it is usual to attach a plate or two-armed lever, hereinafter called the plug lever, the cone bearing of the plug forming the fulcrum thereof. The two arms of the plug lever are usually formed to co-act with a thrust piece, which projects from the works of a clockwork timing device to which the gas cock is attached. The thrust being pivotally attached to a lever in the clock, which causes it to be withdrawn towards the clock after every rapid outward movement, is also capable of angular movement, so that, by means provided in the clock, the direction of the thrust is diverted to one or other of the arms of the plug lever as prearranged, causing the lever to pass through its prescribed limit of angular displacement, and to reverse the movement. Provision is sometimes also made for varying the direction and limit of the thrust, so as to effect other angular movements than the extreme angular displacement above referred to, in order to effect a cycle of operations, each at predetermined times.

The angular movement of the thrust being usually made through the casing of the clock, to operate the gas cock exterior of the same necessitates a long narrow slot in the clock case, which is undesirable.

One object of the present invention is to effect the movement of the plug lever by means of two parallel slides, one of which operates one arm of the plug lever, and the other the opposite arm; and these slides entering at the side of the clock case, by preference in line with the centre of the clockwork, can move in closely fitting holes or bearings, rendering the clock case dust and insect proof.

The invention is fully described, there being nineteen drawings and nine claims.

Thermostats.—No. 293,810.

GENERAL GAS APPLIANCES, LTD., and COLEMAN, F. S., both of Manchester.

No. 3852; Feb. 11, 1927.

The object of this invention is an improved and simplified thermostat; and the kind described is characterized by adjustable mechanism comprising two balls in a guide and a spacing or positioning member for the balls. According to a further feature, the regulator for adjusting the spacing member is arranged at right angles to the thermostatic unit. Other features of the invention lie in the general details of construction as described and claimed.

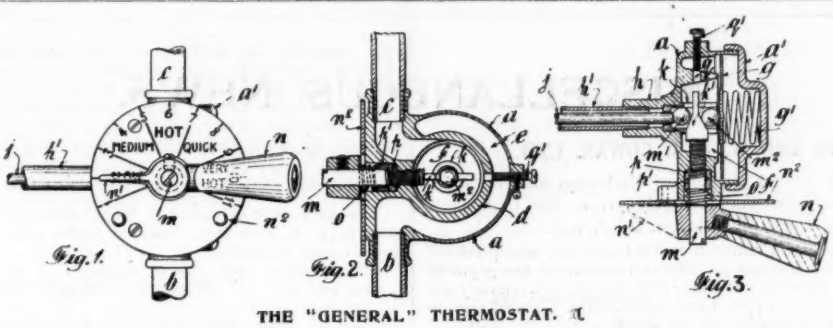


Fig. 1. Fig. 2. Fig. 3.

THE "GENERAL" THERMOSTAT.

Fig. 1 is a front elevation; fig. 2 is a sectional side elevation; and fig. 3 is a sectional plan of one form of the invention.

The casing *a* is substantially circular, with the inlet and outlet branches *b* and *c* in line with each other and diametrical to the casing. Inside the casing is a curved web *d* which divides the casing into two compartments *e* and *f*, the web rising from the back of the casing for about half the depth thereof.

On the front of the casing is a removable cap a^1; and between this and the web, the edge of which forms a seating, are a disc valve *g* and spring g^1. In the back of the casing and central thereto is a short tubular boss *h*, and screwing into it is a brass or like tube h^1, closed at the end farthest from the regulator casing. Within this tube is a non-expansible rod *j* made (say) of what is known as "Invar" steel, one end bearing against the closed end of the tube h^1 and the other end projecting into the regulator casing and lying a short distance away from the disc valve.

Extending forwardly from the rear wall of the casing is a small tube *k* screwed into the boss *h*, slotted from its upper end. Extending transversely through the slot of the tube is a wedge-shaped plate k_1, which at its lower or wider end slidably rests upon or bears against the end of a screwed spindle *m*. To right and left of the wedge-shaped plate, and contacting with its sloping edges, are hardened steel balls m^1, m^2, neatly and slidably fitting the tube, the ball m^1 also bearing against the end of the rod *j* and the ball m^2 against a small recess in the centre of the disc valve *g*. The spindle, which lies at right angles to the rod and tube, extends through a gland packing *p* in the wall of the regulator casing (which is thickened at such part), and outside the casing is fitted with a handle *n* and pointer n^1. Also on the spindle, but held against rotation by a screw, is a dial n^2. A spring *o* surrounding the spindle *m* and acting between the handle *n* and a gland packing ring p^1 serves to maintain a light and even pressure on the gland packing *p*, thereby maintaining a gas-tight joint, as well as giving a smooth braking effect on the handle.

On rotating the handle, in one direction, the wedge-shaped plate is pushed between the balls, thus causing them to separate, and to push the valve away from its seating; while on rotating the handle back in the opposite direction the wedged-shaped plate moves from between the balls and allows the valve, under the pressure of its spring, to reduce the passage for the gas.

A by-pass is provided consisting of a small hole *q* opposite the regulator spindle and through the partition *d*. A regulating screw q^1 is provided in the casing.

Modifications of the above form of thermostat are also described.

Coke Skips.—No. 293,916.

CROFT, C. M., of Lytton Grove, S.W. 15, and BUXTON, R. H., of Southfields, S.W. 18.

No. 10,721; April 21, 1927.

This invention has reference to the transportation of hot coke from vertical chamber ovens or vertical retorts.

According to the invention, a truck, adapted to travel from beneath the oven or retort towards the line of a coke conveyor or the like, is provided with a coke-receiving skip pivotally mounted thereon in such a way that its lower part can swing forwardly in the direction of movement of the truck; means being provided whereby, upon the forward movement of the truck, the skip is struck or actuated in such a manner as to be tilted about its pivotal axis, thereupon automatically discharging its contents, and whereby on the return movement the skip is automatically restored to its coke-collecting position. The bottom of the skip is formed by a suitably curved plate fixed upon the truck chassis, so that in the forward movement the lower part of the skip passes beyond this plate, allowing the coke to fall on to the conveyor or the like, while the rear wall of the skip also forces the coke forward from the curved plate.

The tilting movement of the skip may be produced by one or more spring buffers, ramps, or rails having curved or inclined striking faces; these parts being so located in the path of the moving truck as to strike one or more projections or contact arms, mounted upon the upper part of the skip above its pivotal axis. The contact arms may in some cases be formed as, or provided with, balance weights so that on the return movement the arms will restore the empty skip to its upright position. Alternatively, the contact arms which have been tilted upwardly by riding up the buffer or ramp faces may be arranged to meet a cam or cams on the return movement, being thereby depressed to bring the empty skip into its coke-collecting position.

In another arrangement, the tilting of the skip may be produced by pulling forward its lower part, either by means of one or more rocking levers pivoted at about the level of the axis of the skip and having their upper ends free to contact with suitable tipping ramps during the forward movement, or by slides mounted upon the truck frame and adapted to engage suitable stops in the path of the truck; the rearward movement of the slides when striking the stops being converted into a forward movement of the skip, for example by ropes passing round guide pulleys.

Cookers.—No. 294,031.

MARWOOD, F. T., of Pleasington.

No. 28,290; Oct. 25, 1927.

This invention relates to a gas cooking stove of the type in which the products of combustion from the burner circulate around the oven instead of through it, and which is provided with a top chamber surmounted by a hotplate; the latter being provided with openings adapted to be closed when required.

According to the invention, the oven is interposed between upper and lower chambers. One of the upper chambers contains at or near the top gas rings for boiling purposes and may be used for heating plates, and the other chamber comprises a burner for grilling purposes; while the lower chamber is situated underneath the bottom flue and is adapted to hold plates for warming purposes. The oven door is preferably of the drop type, in which case it is provided with friction devices for regulating its freedom of movement so that it will remain in any position.

Valves of Water-Heaters.—No. 294,056.

EWART, J. H., of Euston Road, N.W. 1.

No. 34,958; Dec. 23, 1927.

This invention relates to fittings for the water and gas supply valves of water-heaters of the kind wherein a piston-valve is operated by the pressure of the water.

It has been proposed in such fittings to arrange an upright rod connecting the gas valve to the piston-valve to pass through a chamber intermediate of the piston-valve cylinder and the chamber containing the gas valve, and to provide in the intermediate chamber a water seal to prevent escape of gas round the rod; the latter passing through a guide in a partition between the intermediate chamber and the piston-valve cylinder and allowing leakage of water into the sealing chamber. This is provided with an overflow to determine the level of the water forming the seal, for which two loosely telescoping tubes are employed, one attached to the partition between the gas valve chamber and the intermediate chamber, and the other attached to the upright rod.

The object of the present invention is to avoid excessive leakage of water through the guide just referred to; and therefore there is provided a fitting wherein the connection between the gas poppet-valve and the piston-valve comprises a rod arranged to reciprocate freely in a guide designed to allow leakage of water between the rod and the guide, and provided with opposed valves designed to co-act with seats formed at either end of the guide. The arrangement is such that at the extreme position of the piston-valve in either direction leakage is prevented, whereas a leakage of water is permitted to pass through the guide when the piston moves from one extreme position to the other.

The piston-valve is advantageously connected to the piston-rod carrying the opposed valve members through the medium of a universal joint, so that the rod, which is preferably formed in two parts connected together by a universal joint, is not rigidly connected to the piston but can allow the valves to accommodate themselves to their seats.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Aug. 9.]

Nos. 21,985—22,707.

DRAKE, J. W.—"Settings for gas retorts." No. 22,645.

DRAKES, LTD.—See Drake, J. W. No. 22,645.

FILBY, J.—"Gas hair-drying apparatus." No. 22,353.

GAS ACCUMULATOR COMPANY (UNITED KINGDOM), LTD.—"Means for controlling flow of gas." No. 22,701.

GIBB, D. M.—"Gas-heated cooking ovens." No. 22,187.

GOODWIN, G.—See Gas Accumulator Company (United Kingdom), Ltd. No. 22,701.

HARGREAVES, W.—"Wet gas meters." No. 22,116.

HICKINBOTTOM, F.—See Gibb, D. M. No. 22,187.

LAING, B.—"Apparatus for distillation of solid carbonaceous materials." No. 22,042.

MASCHINENFABRIK AUGSBERG-NURNBERG AKT.-GES.—"Telescopic gasholders." No. 22,193.

NIELSEN, H.—See Laing, B. No. 22,042.

PARKINSON STOVE COMPANY, LTD.—See Gibb, D. M. No. 22,187.

STANSFIELD, A.—"Prepayment mechanism for gas meters." No. 22,354.

WOODALL-DUCKHAM (1920), LTD.—"Tunnel brick kilns." No. 22,566.

MISCELLANEOUS NEWS.

PARKINSON AND W. & B. COWAN, LTD.

The Twenty-Eighth Annual Meeting of Parkinson and W. & B. Cowan, Ltd., was held on Tuesday, July 31, at the Company's Office, Fitzalan Street Works, Kennington Road, S.E.

Sir HENRY COWAN, M.P., Chairman of the Company, who presided, said that the Directors were in a position to recommend the payment of a final dividend of 7½ p.ct., making, with the 2½ p.ct. already declared as interim dividend, 10 p.ct. for the year. There would remain a disposable balance of £44,676, out of which it was recommended that £17,500 be carried to reserve, bringing this fund up to £117,000, and that £27,176 be carried forward to the next account. The dividends of some of the Company's subsidiaries would have been considerably larger had it not been that some engaged in the gas meter trade had to wipe out adverse balances which accumulated during a period of very acute price competition in that particular trade. It was therefore the more gratifying that, in the year to which the accounts applied, they had been able entirely to clear off these adverse balances, and that those subsidiaries had been able to pay modest dividends. The Company's subsidiaries were engaged in a number of different businesses, which enabled the Directors to anticipate that when there was a set-back in one direction there might be an improvement in another, and that therefore (in ordinary circumstances) a fairly uniform average profit might be maintained. The balance of profit and loss account was £73,228.

At their meeting last year, reference was made to the desirability of getting the Company's shares quoted on the London Stock Exchange, and it was recognized that such a quotation would tend to make the shares more marketable, and would probably enhance their value. The Committee of the London Stock Exchange had now granted permission to deal in the Company's shares. The firm had now been established as Australian manufacturers for some forty years, and were recognized as pioneers in Australian industry. They had ten factories, some large and some small, in Australia, New Zealand, and Canada. During his visit to the Commonwealth he was fortunate in being able to negotiate important contracts on behalf of the Company, and to extend the duration of existing contracts. As the manufacturing facilities were not adequate to meet the increasing responsibilities and to provide for future developments, he found it necessary to establish three new factories; two in the State of Victoria, and one in Western Australia. As a result of his visit to New Zealand, they had established an additional factory in that Dominion.

There being no questions raised, the resolution adopting the report and accounts was put to the meeting and carried unanimously.

On the motion of the CHAIRMAN, seconded by Mr. A. J. WEST, it was unanimously resolved—"That there be paid this day a final dividend of 7½ p.ct. (less income-tax) on ordinary shares in issue as at March 31, 1928, making, with the interim dividend, a total dividend for the year of 10 p.ct., less income-tax; that there be carried to reserve fund £17,500; and that there be carried forward to next account £27,176."

WORKMEN'S TRIBUTE TO THE CHAIRMAN OF THE NORTH MIDDLESEX GAS COMPANY.

Mr. A. M. Paddon Honoured.

The Chairman of the North Middlesex Gas Company, Mr. A. M. Paddon, was honoured on Aug. 13 with a presentation of a silver inkstand and an illuminated address, the latter signed by the Co-Partnership Committee and other co-partners in the Company. The names of the Committee are: Messrs. L. Trewby (Deputy Chairman), C. O. Banks, H. Barlett, C. Battson, W. Bradshaw, J. R. Gale, C. W. Hart, F. Holland, J. W. Lampard, A. T. Lilly, C. R. Miles, H. T. Miles, H. J. Osborne, and L. Main (Secretary).

The ceremony took place in the meter house at the Company's works at Mill Hill, in the presence of a large gathering, including many employees.

Mr. L. Trewby (Engineer and General Manager of the Company) presided, and others on the platform were the Directors, Messrs. H. A. Lermitte, H. F. Lofts, Gaspard W. Carey, and E. L. Burton; the Secretary, Mr. Hyde C. Burton, and members of the Co-Partnership Committee.

INESTIMABLE SERVICES.

The CHAIRMAN, in opening the proceedings, read the address, which was as follows:

"To Arthur Matthews Paddon, Esq., M.Inst.C.E.

"We, the undermentioned co-partners in the North Middlesex Gas Company, respectfully beg leave to put on permanent record our very grateful appreciation of the inestimable services you have so skilfully and whole-heartedly rendered, not merely to the Company, which under your able direction we are proud to serve, but to the whole of the great industry in which you have been so actively and conspicuously engaged for many years. The unique and generous profit-sharing scheme devised by yourself, whereby the deserving yet humble employee shares alike with the skilled and higher placed official, has done, and, in our opinion, will continue to do, much to foster and increase that spirit of co-operation between employers and employees which is so vitally necessary for the successful conduct of commercial enterprise and for the well-being of the Empire. In asking your acceptance of the accompanying token of our regard, we beg you to receive our heartfelt wish that you may be spared for many years in health and strength to continue to direct the activities of this Company over which you so notably preside."

The gifts were presented to Mr. Paddon by two of the co-partners, Mr. E. J. F. Lampard, foreman works fitter, and Mr. J. Anthony, main-laying inspector.

Mr. LAMPARD said: As an employee of the Company for over 24 years, and one who preferred to remain outside the Gas Workers' Union in 1920, I have been chosen to represent the co-partners on the works, and to beg your acceptance of this address and inkstand, which we trust will serve as a memento of our loyalty in the past and an earnest of our endeavour in the future to further the prosperity of the Company and the interests of co-partnership.

Mr. ANTHONY said: Representing the co-partners at Finchley and on the district, I beg to support my colleague, and to assure you that the address truly expresses our feelings on this occasion.

Loud applause greeted the rising of the Chairman of the Company to acknowledge the tributes.

FLAG WHICH WOULD NOT FALL.

Mr. PADDON, after expressing his genuine surprise and gratitude at the gifts, said his mind went back some eight years to the very troublesome time in which he and Mr. Lampard were associated. "A gentleman gratuitously informed me," continued the speaker, "that the flag would have to come down, and we should have to give in. I told him I did not think either thing would happen; and it did not, owing to the very loyal support of Mr. Lampard and his colleagues who helped to establish the valuable principle of independent free co-operation between the Company and its servants."

How happy the results had been they knew very well, proceeded Mr. Paddon. Only that day they had been considering the position of the Company as reflected in the last six months' accounts; and nothing could have constituted a greater tribute than the results they had been able in co-operation to achieve. They could not have done what they had in the way and to the extent they had for the benefit of the public and the advancement of their own interests if they had not been co-partners working together to a common end. "Believe me," he said, "my sole conception with regard to co-partnership was to give all I could, and not get anything beyond the success of the movement and the prosperity it might bring to you. Little by little you are all beginning to understand more what co-partnership means. If we only had what lies behind we should still have strong justification for the departure we took. But I hope all will do what lies in their power to promote the ends and purpose of co-partnership, and leave it to those who come after as something to be developed further.

"I shall never ask you to give up 2½ p.ct.," said Mr. Paddon, in conclusion. "It is not necessary when men pull together that their wages should be curtailed. The only thing necessary is a hearty spirit of co-operation, and sincere sympathy with the difficulties of all involved. Then no sacrifice will be necessary, but even greater reward will await those who have loyalty, faith, and belief in each other."

PREMIER GAS MANTLES, LTD.

Under a winding-up order made against this Company on July 2, on a creditor's petition, the statutory meetings of the creditors and of the shareholders were held on Aug. 9 at the Board of Trade Offices, 33, Carey Street, W.C. Mr. J. Barwick Thompson, Assistant Official Receiver, presided. It appeared that the Company was incorporated in June, 1925; its object being to acquire and take over as a going concern the business of manufacturers of incandescent mantles carried on by the Evelyn Manufacturing Company, Ltd. The nominal capital was £7000, the whole of which had been issued as fully paid, 14,625 ordinary shares of 4s. each, and 21,500 deferred 1s. shares having been issued as part consideration of the purchase price. On June 18, 1925, the Company entered into an agreement to acquire the above business, together with the lease of works in Deptford, and the benefit of all contracts for £6000, which was to be satisfied in part as above and in part as to the issue of £2000 in debentures. The Company was also to collect all book debts and pay the liabilities; any deficiency to be made good by the International Industries and Finance Company, Ltd. The Company appeared to have been in financial difficulties almost from its inception, in consequence of difficulty experienced in obtaining payment for goods sold during the first year's trading; and Benito Weiser, one of the Directors, had stated that he obtained loans from friends amounting to £1500, with security on behalf of the Company, to enable it to increase its output at the factory. In October, 1926, the Darlington Trust, Ltd., advanced £4000 to the Company on security of a debenture, repayable by quarterly instalments of £250 each; and of this advance £2300 was used in improvements to the factory. A year later the Darlington Trust advanced another £1000 on the security of a debenture, to rank *pari passu* with that already issued to them, and on the same terms. The first balance-sheet which appeared to have been prepared by the Company's auditors was dated Oct. 22, 1926, and showed a loss of £5694; and a further sheet dated Dec. 31, 1927, showed a profit of £1817. The trading accounts lodged with a statement of affairs for the whole period of the Company's trading showed a gross loss of £1454 for the period to October, 1926, and a gross profit of £7852 for the period from October, 1926, to Feb. 23, 1928. In consequence of the shortage of funds, the Company was unable to comply with the conditions contained in the debentures issued to the Darlington Trust, and on Feb. 23 last they appointed

Mr. H. Sansom, of Darlington, as their receiver and manager. He had reported that no money had as yet been received by him. According to a draft statement of affairs prepared as at the date of his appointment, the liabilities amounted to £10,249, including £4799 due under the debentures, and £5398 to unsecured creditors. The assets were returned at £4990, and there seemed to be no prospect of a dividend being received by the unsecured creditors. Weiser had attributed the failure of the Company to lack of working capital. The meetings resulted in the liquidation remaining in the hands of the Official Receiver.

COAL TRADE REPORTS.

From Our Own Correspondents.

NORTH-EAST COAST.

The shortage of boats for prompt loading is still the chief complaint on 'Change. It is affecting the coal market in several ways. Cargoes which are sold and due to be shipped are left on the collieries' hands, and their position is thus considerably weakened. Apart from this, the shortage has the effect of raising freights, and merchants who have to quote c.i.f. prices are placed at a disadvantage. Apart from the tonnage question, however, inquiry is still very slow, and there seems to be little improvement in the general situation.

The gas coal trade, both home and export, is slack. The demand for coking coals has dwindled; and the bunker position is affected by the shipping shortage. Many collieries, especially in Northumberland, are having much idle time, and generally speaking prices are only maintained by the ruling understandings and agreements.

Wear Special gas makes are quoted at 15s. 3d. to 15s. 6d. f.o.b., and best qualities 14s. 9d. Others are 13s. 3d. to 13s. 6d. Durham unscreened coking is quoted 13s. 3d. to 13s. 9d. Best bunkers ask 14s. to 14s. 3d., and ordinaries are plentiful at 13s. to 13s. 3d. Northumberland steams maintain agreed minimum prices, from 13s. 6d. for best screened sorts downwards.

Gas coke is well sold forward, and 20s. to 20s. 6d. f.o.b. is quoted; but stocks are accumulating for lack of tonnage, and the prompt position is rather easier.

YORKSHIRE AND LANCASHIRE.

The demand for domestic coal has naturally been restricted during the past week owing to local holidays, and collieries have not depleted their accumulated stocks to any extent. Prices have not been materially altered. The large consuming industries are not requiring the anticipated amount of fuel, and as a result steam coal for prompt delivery is to be obtained at slightly discounted figures. It is expected, however, that in a few weeks' time more stabilized trade will follow.

Gas coal should now be moving more freely in view of the autumn weather and the laying-in of stocks at the various gas-works. Prices for this commodity are rather inclined to stiffen for forward contracts. The export market appears to be satisfying the requirements of those interested in the Five Counties' Scheme.

The following are to-day's Humber bunker and export prices f.o.b. usual shipping ports: South Yorkshire—Hards, Association, bunkers 18s. 6d. and export 15s.; screened gas coal, export 14s. to 15s. 6d.; washed trebles, 14s. 6d. to 15s.; washed doubles, 14s. 3d. to 14s. 6d.; washed singles, 13s. 6d. to 14s.; washed smalls, bunkers 14s. to 14s. 3d. and export 11s.; rough slack, bunkers 13s. to 14s. 3d.; smithy peas, export 16s. 6d. to 17s. 6d.; West Yorkshire—Hartleys (f.o.b. Goole), export 13s. 3d. to 13s. 9d.; screened gas coal, 14s.; washed trebles, 14s. 3d. to 15s.; washed doubles, 13s. 6d. to 13s. 9d.; washed singles, 13s. to 13s. 9d.; washed smalls, bunkers 13s. 6d. and export 11s.; unwashed trebles, export 14s.; unwashed doubles, 11s. to 11s. 3d.; rough slack, 8s. 9d. to 9s. 3d.; and coking smalls, 7s. 9d. to 8s. 9d. Derbyshire and Nottinghamshire—Top hards, bunkers 18s. to 18s. 6d. and export 14s. 6d. to 15s. 6d.; cobbles, 13s. 6d. to 15s.; washed trebles, 14s. 3d. to 15s.; washed doubles, 14s.; washed singles, 13s. 6d.; washed smalls, 14s. to 15s. 6d.; unwashed doubles, 11s. to 12s.; and rough slack, 13s. to 14s. 3d. and 9s. to 9s. 6d. Yorkshire, Derbyshire, and Nottinghamshire—Screened steam coal, 16s. 6d. to 17s. 6d. and 12s. to 13s. 3d.; gas coke, 20s. to 23s.; furnace coke, 19s. to 19s. 6d.; and washed steam, bunkers 17s. to 18s. 6d.

MIDLANDS.

Collieries are issuing notices of an advance of 1s. in their prices from Sept. 1 next. At present there is no concrete evidence of improvement in the industrial branch. The tone is more hopeful, however. Inquiries which are circulating in the engineering trade encourage the belief that the new momentum expected in the autumn may be a reality this year.

In that event output restriction may be more effective in firming up prices of industrial fuel as seasonal expansion develops in the house coal department. There is more activity in the stocking of domestic supplies against winter requirements. Not only have consumers been availing themselves more freely of the low summer prices, but merchants are putting down a certain amount of stock. This has given a stiffening tendency to coal of good calorific value which possesses the quality of hardness. Advances of 6d. to 1s. have already been put into effect in some cases.

There are abundant supplies of all ordinary grades if there are fewer spot lots on offer. Slacks are readily obtainable round 6s. to 7s. at pits. The position with regard to nuts is quite easy. With the extinction of more blast furnaces, coke suppliers have little chance of putting prices of smelting qualities on an economic footing—12s. to 13s. f.o.t. being still the ruling rates.

TRADE NOTES.

"Simplex" Water Gas Plant for Newmilns.

The Vertical Gas Retort Syndicate, Ltd., 17, Victoria Street, Westminster, have received an order from the Burgh of Newmilns and Greenhole Gas Committee for an improved "Simplex" water gas plant.

"A Mystery Solved."

This is the title of a non-technical booklet on gas meters which has just been published by Messrs. Thomas Glover & Co., Ltd., of Gothic Works, Edmonton, N. 18. Dedicated to all consumers of gas, copies and terms for bulk deliveries can be had on application.

"R. & M." Bearings.

A new edition of the abridged catalogue of the Ransome & Marles Bearing Company, Ltd., of Newcastle-on-Trent, gives details of the most frequently adopted types and sizes of "R. & M." bearings, together with brief instructions regarding mounting and maintenance. The firm will be pleased to supply our readers with copies on request.

Big Contract for the Stanton Ironworks Company.

The Stanton Ironworks Company, Ltd., near Nottingham, have obtained the contract for 10,000 tons of cast-iron pipes for the Buenos Aires water undertaking. This is the first contract for cast-iron pipes of any importance obtained from this Argentine authority since the war, and has been secured in the face of severe competition from foreign makers.

"Simplex" Regenerative Coke Ovens.

The Simplex Coke Oven and Engineering Company, Ltd., whose sole agents in England are now the Chemical Engineering and Wilton's Patent Furnace Company, Ltd., of 76, Victoria Street, S.W., have recently put into operation a battery of 23 regenerative coke ovens for the Clay Cross Company, Ltd., Clay Cross, near Chesterfield. Since erecting these ovens, the Simplex Company, through their authorized agents, have put on to the market a new type of regenerative oven in which, notwithstanding reversals, combustion takes place continuously in all the flues—a system which ensures continuous process of carbonization. Particulars of this new system are available on application to the Chemical Engineering and Wilton's Patent Furnace Company, Ltd.

"Raywave" Heating for Hothouses.

A novel and valuable invention for horticultural work has been brought to our notice, in the form of a new type of heating appliance for market growers, tomato houses, and the like. It is adaptable to any existing houses, small or large. In the case of the small greenhouse, a gas boiler can be installed which will yield a range of heat as desired, by the simple operation of a thermostat. It is claimed that the running costs are about one-third of those of the installations now in use. The surprising feature of the invention is the simple method of fixing. There is only one pipe system, and the appliance is capable of radiating heat, at high or low temperature, to any part of the greenhouse. The rays, it is stated, are "actinic," which are physically identical with light rays and heat waves. The invention is, we understand, to be on view at the forthcoming North London Exhibition, in October, at the stand of the inventor, H. Hobbs Wilson, of 268, High Road, Wood Green.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Aug.* 20.

Further business is reported in pitch, and the price is steady at about 50s. per ton f.o.b. makers' works.

Creosote is unchanged at 7⅝d. to 7¾d. per gallon.

Pure benzole is about 1s. 8d. per gallon; 95/160 solvent naphtha, 1s. 5d. to 1s. 6d. per gallon; pure toluole, 1s. 11d. to 2s. per gallon; and pyridine bases, about 5s. per gallon.

Tar Products in the Provinces.

Aug. 20.

Owing to the holidays there is practically no business passing in tar products, and markets are unchanged.

The average prices of gas-works products during the week were: Gas-works tar, 35s. to 40s. Pitch—East Coast, 47s. 6d. to 50s. f.o.b. West Coast—Manchester, 41s. 6d. to 42s. 6d.; Liverpool, 43s. 6d. to 45s.; Clyde, 42s. 6d. to 45s. Toluole, naked, North, 1s. 5d. to 1s. 6d. nominal. Coal-tar crude naphtha, in bulk, North, 9d. to 10d. Solvent naphtha, naked, North, 1s. 1½d. to 1s. 2d. Heavy naphtha, North, 1s. to 1s. 0½d. Creosote, in bulk, North, liquid, 6d. to 6¼d.; salty, 5⅞d. to 6⅛d.; Scotland, 5⅞d. to 6⅛d. Heavy oils, in bulk, North, 8⅛d. to 8½d. Carbolic acid, 60 p.ct., 2s. 2d. to 2s. 2½d. prompt. Naphthalene, £13 to £15; salts, £5 to £5 10s., bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

Benzole Prices.

The following are considered to be the market prices to-day:

	s. d.	s. d.	
Crude benzole . . .	0 10½	to 0 11	per gallon at works
Motor ,, . . .	1 4⅜	,, 1 5	,, ,, ,,
90 p.ct. ,, . . .	1 7	,, 1 8	,, ,, ,,
Pure ,, . . .	1 10	,, 1 11	,, ,, ,,

CONTRACTS OPEN.

Coal.

The Clacton Urban District Council Gas Department invite tenders for the supply of coal. [See advert. on p. 422.]

Will.—Mr. Arthur Devoil, a Director of the Westerham Gas Light and Coke Company, left £19,724 (net £18,847).

Model Engineers' Exhibition.—The Tenth Model Engineers' Exhibition will open on Sept. 15 in the Royal Horticultural Hall, Westminster.

Gas Cheaper at Kidderminster.—The Kidderminster Gas Company have reduced the price of gas by 4d. per 1000 c.ft., to take effect after the reading of the meters for the current quarter.

Reductions at Tipton.—The Tipton Urban Council have reduced the price of gas as follows: Power consumers, by 6d. per 1000 c.ft., less 10 p.ct. discount; domestic consumers, by 3d. per 1000 c.ft., less 10 p.ct. discount.

Lower Charges at Perth.—At the budget meeting of the Perth Town Council, there was no opposition to the estimates of the Gas Department, which embraced a reduction of 1s. per 1000 c.ft. for lighting, and 10d. for power and heating.

Purchase of the Earl Shilton Gas-Works.—The Board of Trade have confirmed an Order relating to the purchase by the Hinckley Urban District Council of the Earl Shilton Gas-Works; the actual amount paid over by the Council being £21,652.

Premix Gas Plants has been registered, with a capital of £12,000, to acquire so much of the business hitherto carried on by Ritchie, Hart, & Co., Ltd., as relates to the manufacture of "Premix" gas plants. Solicitors: Linklaters & Paines, 2, Bond Court, Walbrook, E.C. 4.

Croydon Gas Company's Dividends.—The Directors have resolved to pay, in respect of the half-year ended June 30, interim dividends at the following rates per annum: On sliding-scale stock, 7 p.ct.; on the maximum dividend stock, 5 p.ct.; and on the redeemable preference stock, 7½ p.ct.

Greenock Gas Rate Reduced.—At a recent meeting of the Greenock Gas Committee it was reported that the Department had had another successful year, and it was agreed to reduce the price of gas by 1d. per 1000 c.ft. The centenary of the Greenock Gas-Works will be celebrated next month.

Hornsey Gas Company's Reduced Price.—The Directors of the Hornsey Gas Company announce a retrospective reduction of ½d. per therm in the price of gas, bringing it to 7½d. per therm, to take effect from the date of the reading of the meters for the Midsummer quarter. This reduction is equivalent to 2½d. per 1000 c.ft.

Cheaper Gas in Liverpool.—The Liverpool Gas Company announce that the price of gas supplied through ordinary meters, after the last June quarter meter readings, will be reduced to 7·6d. per therm (3s. per 1000 c.ft.). The charge for gas supplied through prepayment meters has been reduced to 9·1d. per therm (or 3s. 7·225d. per 1000 c.ft.) from Aug. 16, and, to enable this net rate to be charged, the discount allowed on all collections made will be relatively increased.

Research in Safety in Mines.—The new laboratories which have been built at Sheffield for the Safety in Mines Research Board are now being taken into use. The new Research Station will be the country's chief centre of scientific experiment with the object of making coal-mining a safer occupation. The Prime Minister has agreed to perform the formal opening ceremony on the afternoon of Thursday, Oct. 11. Commodore H. Douglas King, Secretary for Mines, will preside.

Increased Sales at Malton.—The report of the Directors of the Malton Gas Company for the half-year ended June 30 last shows that the sale of gas has increased by 4453 therms, or 890,000 c.ft., over the corresponding half-year twelve months ago, and is a record for the June period. The balance of profit is £2300. There is a balance of £3282 in the profit and loss account brought forward from the last account, and by adding the net profit for the half-year, this is increased to £5223, out of which the Directors recommend the payment of a dividend of 6¾ p.ct. for the half-year, free of income-tax, which will absorb £1560, and leave £3663 to be carried to the next account.

Newport (Salop) Gas-Works.—The Newport (Salop) Gas Company's lease of the undertaking expires shortly. At a meeting of the Newport Urban Council last week, a letter was received from the Marsh Trustees stating that they were prepared, subject to the consent of the Charity Commissioners, to transfer to the Council at any time before July 28, 1932, upon terms to be arranged, the interest of the Trustees in the gas-works. The Chairman (Mr. E. J. Wright) said the matter was one to which the Council should give early attention, and he moved that the Special Committee interview the Directors of the Gas Company. He observed that the question ought to be followed up. The Trustees had met them very fairly, and he thought the feelings of the Gas Company should be ascertained. The proposal was agreed to.

Increased Sales at Woking.—The report of the Directors of the Woking District Gas Company for the half-year ended June 30, states that in comparison with the half-year ended June 30, 1927, the quantity of gas sold shows an increase of 3,337,759 c.ft., or 4·18 p.ct. The profit on the half-year's working, after charging interest on debenture capital and temporary loans, writing £2000 off suspense account, and transferring £379 to special purposes fund, amounts to £3252, which, with £4641 brought from the previous half-year, makes a disposable balance of £7894. It is recommended that dividends for the half-year be paid at the following rates per annum (less income-tax) on the ordinary and preference stocks, which will absorb £2651, and that £500 be transferred to reserve fund, leaving £4742 to be carried forward to the next account: On the "A" ordinary stock 10 p.ct., on the "B" ordinary stock 7 p.ct., on the "C" preference stock 5 p.ct., and on the 8 p.ct. redeemable preference stock 8 p.ct.

Coke Oven Contract.—A contract for the construction of coke ovens and bye-product plant, at a cost of about £1,000,000, has been placed with the Coppée Company (Great Britain) by the Broken Hill Proprietary Company, of Newcastle, New South Wales.

South Shields Gas Company's Dividends.—Dividend warrants for the half-year ended June 30, as follows, and payable on Aug. 15, were posted on Aug. 14: On the consolidated stock, 4¾ p.ct.; on the new stock, 4¾ p.ct.; and on the ordinary stock, 2⅝ p.ct., all less income-tax.

The Gourock Town Council have decided to reduce the price of gas by 4d. per 1000 c.ft.

The Mansfield Gas Committee have carried forward to the reserve fund a surplus of £1677 on the past year's working.

The Mirfield Gas Company were the winners of the second prize in the "Best Tradesmen's Exhibit" section at the Mirfield annual carnival.

The Cheslyn Hay Council have again decided to light the street lamps with gas during the coming season. To cover the cost, the Council have recommended the levying of a 4½d. rate.

Considerable alarm was caused in the vicinity of a gasholder at Sheepscar, Leeds, when, on Aug. 17, a building within a few feet of the holder caught fire. Firemen, however, soon averted any danger.

The death took place on Aug. 18, at Walsall, of Mr. Edward J. Shaw, principal of the firm of E. J. Shaw & Co., lamp and gasfitting manufacturers. Deceased was a former President of the Walsall Chamber of Commerce.

Fire broke out last week in a yard belonging to the Shipley Gas-Works. The outbreak occurred in a hut, and at one time there was considerable danger of the flames spreading to a heap of coal which was estimated to weigh a thousand tons.

It was stated at a recent meeting of the Coleford Urban District Council that the West Gloucestershire Power Company were prepared to tender for lighting certain parts of the town on a three years' contract for 1100 hours' lighting at £108. A tender was received from the Coleford Gas Company, but nothing definite was decided.

At a recent meeting of the Thornton-le-Fylde District Council, it was decided to reduce the price of gas by 2d. per 1000 c.ft. Councillor Bailey said that, despite reduced consumption, the undertaking showed satisfactory results. After transferring £324 to renewal fund and £1250 to district fund, there was a profit of £449 to carry forward. This gave £1740 as a stand-by.

The Melbourne Gas Company have written to the Melbourne Council stating that, owing to the curtailment in the number of lamps to be lighted by gas, they must modify their previous quotation, and increase it from £3 2s. 6d. to £3 7s. 6d. per lamp. The Council have this communication before them, and have decided to offer the Gas Company a sum of £3 5s. per lamp.

During a case which was heard at the Dewsbury West Riding Court last week, when two schoolboys admitted breaking three lamps belonging to the Mirfield Gas Company, it was stated by Mr B. Hudson, Manager of the Company, that out of 540 lamps in use, from 275 to 300 had to be repaired each season. The boys were ordered to pay 14s. each, costs and damages.

Boring operations have commenced on the site near the Bedwas Navigation Colliery, Bedwas, where the British Benzol and Coal Distillation Company propose to erect their bye-product plant. It is stated that a seam of soft coal underlies the site, and this may have an important effect on the preliminary work. The work is being carried out by the Francois Cementation Company (Doncaster).

An editorial article in the "Barbados Advocate" for July 28 compliments the Barbados Gas Company, Ltd., on reducing the price of gas for cooking by 10 p.ct. "We have not the slightest doubt," it stated, "that not only will present consumers be benefited by this reduction in price, but that a great many more of the public will swell the ever-increasing ranks of people who cook by gas."

On Aug. 12 three men were killed and four others were severely injured in a gas explosion in the Ruhr, when testing operations were being carried out on a section of the long-distance main in connection with the Ruhr coke oven gas scheme. In view of the considerable pressure which these pipes will have to stand when the scheme is in operation, they are tested, section by section, up to six atmospheres; and it was during such a test that the accident happened.

A gas explosion, attended by considerable damage to property, but fortunately not involving any serious personal injuries, occurred on Aug. 11 at the dwelling-house and boot repairing shop of Mr. Arthur Leatherhead, 90, Sandon Street, New Barford, Nottingham. Mr. Leatherhead endeavoured to trace an escape of gas with lighted matches, and the explosion occurred. He was burned about the head and arms, the ceiling of the kitchen immediately below the bedroom where the explosion took place was blown in, and some of the contents of the bedroom suffered.

The Campbell Gas Engine Company, Ltd., of Halifax, has been purchased by Messrs. George Cohen, Sons, & Co., Ltd., of London. The firm was founded by Mr. Hugh Campbell, who gradually extended the business until over a thousand men were employed. During the war the works were taken over as a munitions factory. Latterly trade has fallen off, and in January of this year a private meeting of creditors was held. At the meeting it was stated that the shares issued numbered 7368 and were valued at £10 each; land and buildings were valued at £21,781; the Albert Foundry at £23,374; workmen's dwellings at £1608; plant and machinery at £38,698; and stock in hand, and on consignment, at Halifax, at £77,961.

STOCK MARKET REPORT.

THERE was more confidence displayed in the stock markets last week; and although the monetary position still restricted gilt-edged investments, business generally appeared to expand in volume. The announcement of the new Treasury Bond issue to meet the maturing War Bonds had a stimulating effect on prices; but one of the best features was the return to favour of Chinese bonds. Brazilian bonds also, in view of the operations of the various sinking funds within the next few weeks, are attracting considerable attention, but the market is not too well supplied.

In the Industrial section operations were chiefly confined to well-established concerns. Mond Nickels and Courtaulds made good headway; and in the Tobacco section Imperials came into strong demand in the hope of the long-expected scrip bonus announcement.

In spite of the holiday season, inquiries in the Gas Market were as numerous as usual; but the stock available is limited. Colombo ordinary was marked up 1s. to 32s.-34s.; Oriental ordinary dropped 2 points to 115-118; and Imperial Continental capital rose 2 points to 170-175. It will be noticed that the Maidstone 3 p.t. debenture is now quoted in the Official List at 53-56. The Sheffield Company are making application to the Board of Trade for consolidation of the three stocks, and for the variation of the voting powers.

The following transactions were recorded during the week:

On Monday, Bristol 5 p.ct. maximum 89½, British 116, Commercial 99, 3 p.ct. debenture 59½, Gas Light and Coke 19s., 19s. 1½d., 3 p.ct. debenture 60, 60¼, 60⅝, Imperial Continental 173, Oriental 116, Primitiva 23s. 9d., 24s., 24s. 0¾d., 24s. 3d., South African 5, 5 1/16, South Metropolitan 105¼, 105⅜, 106½, 3 p.ct. debenture 60, Tottenham "B" 97¼, 4 p.ct. debenture 77. Supplementary prices, Gas Light and Coke 5 p.ct. debenture 100½, 100⅝.

On Tuesday, Bournemouth 6 p.ct. preference £11 6s. 9d., Bristol 5 p.ct. maximum 90¼, British 115, Colombo 32s., 32s. 6d., Commercial 98⅞, European 8 11/16, Gas Light and Coke 18s. 10½d., 19s., 19s. 0¾d., 19s. 1½d., 3½ p.ct. maximum 62½, 62⅝, 4 p.ct. preference 79½, Imperial Continental 172, 172½, Newcastle 3½ p.ct. 16s. 8½d., 16s. 9d., North Middlesex 6 p.ct. 98½, Primitiva 4 p.ct. debenture, 76, South Metropolitan 105½, 106¼, 3 p.ct. debenture 59½, Tottenham "B" 97, 97½. Supplementary prices, Aldershot 4 p.ct. debenture 77, 77½, Bristol 4 p.ct. new debenture 74⅜, Gas Light and Coke 5 p.ct. debenture 100⅝, Hornsey new 5 p.ct. preference 90, South Suburban 7 p.ct. debenture 101, Utah 5 p.ct. 1st mortgages 1936 96½.

On Wednesday, Alliance and Dublin 95, British 114, 116, Colombo 33s. Commercial 99½, Gas Light and Coke 18s. 10½d., 18s. 11¼d., 19s. 0¾d., 19s. 1½d., 3½ p.ct. 63¼ 4 p.ct. preference 79⅜, 3 p.ct. debenture 60¼, Imperial Continental 173½, Primitiva 23s. 10½d., 24s. 1½d., South Metropolitan 6 p.ct. preference 112, South Suburban 5 p.ct. 107, 108, Tottenham 4 p.ct. debenture 78½. Supplementary prices, Bournemouth 7 p.ct. debenture 103, Brighton and Hove 4 p.ct. preference 70, British, Hull, 4 p.ct. debentures 76, Gas Light and Coke 5 p.ct. debenture 100½, 100⅝, 101, Liverpool 5 p.ct. 92¼.

On Thursday, Alliance and Dublin 95, British 115, Cape Town 4½ p.ct. preference 6⅞, Continental Union 33, Gas Light and Coke 18s. 10½d., 18s. 11¼d., 19s. 1½d., 3 p.ct. debenture 60¼, 5 p.ct. debenture 99, 99¼, Imperial Continental 173½, Maidstone 3 p.ct. debenture 53½, Newcastle 3½ p.ct. 16s. 6d. *ex* div., Primitiva 23s. 10½d., 24s. 1½d., South Metropolitan 106¼, 106½, South Suburban 5 p.ct. debenture 98¼, Tottenham 4 p.ct. debenture 77½. Supplementary prices, Brighton and Hove 5 p.ct. debenture 95, Eastbourne "A" 119½, 3½ p.ct. "B" 102½, Gas Light and Coke 5 p.ct. debenture 100⅝, Tunbridge Wells "C" 145, 146.

On Friday, European 8 11/16, Gas Light and Coke 18s. 10½d., 18s. 11¼d., 19s., 19s. 1½d., 5 p.ct. debenture 100½, Primitiva 24s. 1½d., South Metropolitan 106½, 106⅝, Tuscan 20s., 20s. 3d., Wandsworth 4 p.ct. debenture 77¼, 77½. Supplementary prices, Gas Light and Coke 5 p.ct. debenture 100⅝.

Credits were abundant in Lombard Street at the close of the week, and the rate for fresh money, after being obtainable at 3½ p.ct., fell rapidly to 2½ p.ct. In the end balances were practically unlendable, while old loans were renewed at the first-mentioned rate. Discount quotations were well maintained, for which the rise in the American exchange was mainly responsible. The Treasury Bills applied for aggregated more than usual, and the average rate of the Bills allotted was slightly higher than for the previous week at £4 5s. 5·39d. p.ct.

The feature of the Foreign Exchange market was the sharp rise in the dollar exchange, which closed at 4.85 15/32. The Dutch rate also moved in favour of sterling to 12.10⅛, while the Madrid rate rose to 29.13. French francs finished lower at 124.21½, and the Italian quotation was 92.81.

With China buying Silver and the Continent as a seller, the rate for cash was unchanged at 27 7/16d. per oz. Gold rose ⅛d. to 84s. 11½d. per oz.

The Bank Rate is 4½ p.ct., to which it was reduced from 5 p.ct. on April 21, 1927. The Banks' deposit rate is 2½ p.ct., and the deposit rates of the discount houses are 2¼ p.ct. at call and 2¾ p.ct. at notice.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr	Dividends. Last Hf. Yr.	NAME.	Quotations. Aug. 17.	Rise or Fall on Week.	Transactions Lowest and Highest Prices.
£			%p.a	% p.a.				
171,978	Stk.	Feb. 9	6	6	Aldershot 5 p.c. max. C.	74—79	..	..
412,992	,,	,,	4	4	Do. 4 p.c. Pref.	69—72	..	..
1,851,868	,,	Apl. 12	7	7	Alliance & Dublin Ord.	94—97	..	95
374,000	,,	July 12	4	4	Do. 4 p.c. Deb.	68—66	..	..
522,654	,,	Mar. 8	7	7	Barnet Ord. 7 p.c.	111—114	..	..
300,000	1	Apl. 26	1/7½	1/7½	Bombay, Ltd.	22/—24/-	..	..
170,000	10	Mar. 8	8½	8½	Bournemouth 5 p.c.	12¼—13½	..	..
500,050	10	,,	7	7	Do. B 7 p.c.	12½—13½	..	..
375,000	10	,,	6	6	Do. Pref. 6 p.c.	11—11½	..	£11/6/9
50,000	Stk.	July 12	3	3	Do. 5 p.c. Deb.	56—59	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb.	75—78	..	..
357,900	,,	Mar. 8	7½	7½	Brighton & Hove 6 p.c. Con.	116—119	..	..
341,880	,,	,,	6/8/6⅔	6⅔	Do. 5 p.c. Con.	103—106	..	..
1,387,500	,,	July 26	5	5	Bristol 5 p.c. max.	90—91a	..	..
855,000	,,	Mar. 22	8	7	British Ord.	113—116	..	114—116
100,000	,,	June 28	7	7	Do. 7 p.c. Pref.	111—114	..	..
130,000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	78—76	..	..
200,000	,,	,,	5	5	Do. 5 p.c. Red. Deb.	94—97	..	..
100,000	10	May 24	6	8	Cape Town, Ltd.	7½—8½	..	..
100,000	10	Apl 26	4½	4½	Do. 4½ p.c. Pref.	6½—7½	..	6⅞
150,000	Stk.	June 28	4½	4½	Do. 4½ p.c. Deb.	70—75	..	..
696,860	,,	July 26	6	6	Cardiff Con. Ord.	96—99	..	..
337,860	,,	June 28	7½	7½	Do. 7½ p.c. Red. Deb.	100—103	..	..
157,150	,,	Aug 16	6⅔	5	Chester 5 p.c. Ord.	88—93b*	—2	..
79,185	1	Apl. 26	1/-	1/-	Colombo Ltd. Ord.	32/—34/-	+1/-	32/—33/-
24,495	1	,,	1/4‡	1/4‡	Do. 7 p.c. Pref.	20/—22/-	..	..
375,402	1	Apl. 12	1/9‡	1/9‡	Colonial Gas Assn. Ld. Ord.	23/—25/-	..	..
187,848	1	,,	1/7‡	1/7‡	Do. 8 p.c. Pref.	21/—23/-	..	..
2,073,280	Stk.	July 26	7	5	Commercial Ord.	97—100	+1	98¾—99½
475,000	,,	June 14	8	8	Do 8 p.c. Deb.	57—60	..	59½
300,000	,,	Sept. 29	11	11	Continental Union, Ltd.	33—36	..	33
400,000	,,	Mar. 8	7	7	Do. 7 p.c. Pref.	92—97	..	..
787,560	,,	Aug. 16	7	7	Croydon sliding scale	107—110*	—3	..
408,100	,,	,,	5	5	Do. max. div.	82—85*	—2	..
492,270	,,	Aug 16	10	7	Derby Con.	115—120c*	—5	..
55,000	,,	June 28	4	4	Do. Deb.	71—73c	..	..
209,000	,,	Mar 8	5	5	East Hull Ord. 5 p.c.	76—79	..	..
50,000	,,	June 28	5	5	Eastbourne 5 p.c. Deb.	91—96	..	..
1,002,180	10	Mar. 22	14	16	European, Ltd.	8—9	..	8 11/16
19,703,480	Stk.	July 26	5/1/1	5½	Gas Light & Coke 4 p.c. Ord.	18/9—19/3f	..	18/10½—19/1½
2,600,000	,,	,,	5½	5½	Do. 8½ p.c. max.	61½—63½	..	62½—63½
4,157,020	,,	,,	4	4	Do. 4 p.c. Con. Pref.	77—80	..	79¼—79⅝
5,603,620	,,	June 14	8	8	Do. 3 p.c. Con. Deb.	60—62	..	60—60⅝
181,815	,,	,,	6	6	Do. 6 p.c. Br'tf'd Rd. Db.	103—106	..	..
1,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb.	99—101	..	99—100½
42,000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
82,500	,,	Mar. 8	6⅔	6⅔	Hastings & St L. 5 p.c. Conv	90—95	..	..
258,740	,,	,,	5⅔	6⅔	Do. 8½ p.c. Conv.	70—75	..	..
70,000	10	Apl. 26	10	10	Hongkong & China, Ltd.	18½—14½	..	..
173,200	Stk.	Mar. 8	5	5	Hornsey Con. 8½ p.c.	83—85	..	..
1,976,000	,,	May 24	10	10	Imperial Continental Cap.	170—175	+2	173—173½
233,180	,,	Aug. 16	8½	8½	Do. 8½ p.c. Red. Deb.	67—69*	—1	..
235,242	,,	Aug. 16	7	7½	Lea Bridge 5 p.c. Ord.	94—97*	—3	..
2,145,907	,,	Aug. 16	5½	5½	Liverpool 5 p.c. Ord.	90½—90⅝b	—2½	..
600,000	,,	Mar 22	7	7	Do. 7 p.c. Red. Pref.	103½—105½b	..	..
165,736	,,	Aug. 16	8	9	Maidstone 5 p.c. Cap.	112—117*	—3	..
63,480	,,	June 14	3	3	Do. 3 p.c. Deb.	53—56	..	55½
75,000	5	June 14	18	18	Malta & Mediterranean	5⅞—6⅜	..	..
541,920	Stk.	May 24	15	17	Montevideo, Ltd.	94½—96½	..	..
2,051,315	,,	Aug. 16	5	5	Newcastle & Gateshead Con.	15/9—16/8d/*	—/6	..
860,929	,,	,,	4	4	Do. 4 p.c. Pref.	73—74d*	—1½	..
691,705	,,	June 28	3½	3½	Do. 3½ p.c. Deb.	65½—66½d	..	..
131,780	,,	Mar. 8	6/18/0	6/18/0	North Middlesex 6 p.c. Con.	98—101	..	98½
300,000	,,	Apl. 26	9	7	Oriental, Ltd.	115—118	—2	116
188,130	,,	June 28	7½	7½	Plym'th & Ston'house 5 p.c.	107—112	..	..
414,500	,,	Feb. 23	7½	7½	Portsm'th Con. Stk. 4p.c. Std.	101—104	..	..
236,732	,,	,,	5	5	Do. 5 p.c. max.	77—80	..	..
2,334,464	1	—	—	—	Primitiva Ord.	23/6—24/6	..	23/9—24/3
244,500	100	June 1	4	4	Do. 4 p.c. Red. Deb.	91—94	..	..
695,000	Stk.	July 26	4	4	Do. 4 p.c. Red. Deb. 1911	76—78	..	..
416,345	,,	June 28	4	4	Do. 4 p.c. Cons. Deb.	75—77	..	76
150,000	10	Mar. 22	8	6	San Paulo 6 p.c. Pref.	8⅜—8⅞	..	..
370,000	Stk.	Mar. 22	6	6	Sheffield A	103—105e	..	..
419,968	,,	,,	6	6	Do. B	103—105e	..	..
1,047,000	,,	,,	6	6	Do. C	103—105e	..	..
90,000	10	June 14	13	14	South African	4—6	..	5—5 1/16
6,609,895	Stk.	July 26	7½	5	South Met. Ord.	105—107	..	105½—106½
500,000	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	108—111	..	112
1,895,445	,,	July 12	3	3	Do. 3 p.c. Deb.	58—61	..	59½—60
734,900	,,	Mar. 8	6½	6½	Do. 3½ p.c. Red. Db.	100—102	..	..
91,500	,,	Feb. 23	8½	8½	South Shields Con.	110—112d	..	..
1,343,795	,,	July 26	6½	6½	South Suburban Ord. 5 p.c.	105—108	..	107—108
368,837	,,	June 28	5	5	Do. 5 p.c. Deb.	96—99	..	98½
647,740	,,	Mar. 22	5	5	South'mpton Ord. 5 p.c. max.	78—80	..	..
121,275	,,	June 28	4	4	Do. 4 p.c. Deb.	72—75	..	..
260,000	,,	Mar. 8	7	7	Swansea 7 p.c. Red. Pref.	100—103	..	..
200,000	,,	June 28	6½	6½	Do. 6½ p.c. Red. Deb.	99—102	..	..
120,000	,,	July 26	7½	8	Tottenham District A 5 p.c.	116—121	..	..
882,275	,,	,,	6½	6½	Do. B 3½ p.c.	95—98	..	97—97½
150,000	,,	,,	5½	5½	Do. 5½ p.c. Pref.	96—99	..	..
191,255	,,	June 14	4	4	Do. 4 p.c. Deb.	76—79	..	77—78½
289,094	,,	Mar. 8	8½	6⅜	Uxbridge, Maidenhead, & Wycombe 5 p.c.	90—95	..	..
82,330	,,	,,	5	5	Do. 5 p.c. pref.	88—90	..	..
80,000	,,	July 12	8½	5⅜	Wandsworth, Wimbledon, and Epsom— Wandsworth A 5 p.c.	126—129	..	..
255,926	,,	,,	7	7½	Do. B 3½ p.c.	108—113	..	..
493,585	,,	,,	5/19/0	6⅜	Do. C and New	96—101	..	..
353,000	,,	,,	6⅜	6⅜	Do. Wimbledon 5 p.c.	104—109	..	..
98,000	,,	,,	7½	7⅜	Do. Epsom 5 p.c.	110—115	..	..
200,000	,,	,,	5	5	Do. 5 p.c. Pref	88—91	..	..
88,416	,,	June 28	3	3	Do. 3 p.c. Deb.	56—59	..	..
284,743	,,	,,	4	4	Do. 4 p.c. Deb.	75—78	..	77½—77½

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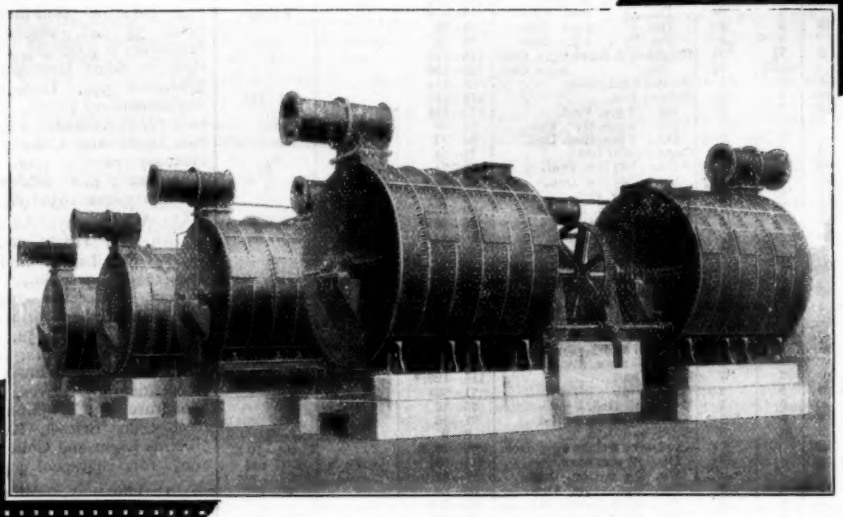

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CONTENTS.

EDITORIAL NOTES.

The Rating Rebuff 441
Some Reflections 441
The Gas Industry in Ireland 442
In Praise of Verticals 442
Dual System of Charging for Gas 443
A Secret of Success—Possibilities and a High Attainment—Problem of Unemployment—New Material Testing Association . . . 443
Steam Accumulators and Smoke Abatement—The "GAS SALESMAN" 444

Personal 444
Presentation to Sir Arthur and Lady Duckham 444
Forthcoming Engagements 444
The Gas Industry in Germany 445
On the Electrical Side 445
New International Association for Testing Materials 446
Potential Investments. XV.—Alliance and Dublin Consumers' Gas Company . . . 446

Irish Association of Gas Managers—Carbonization in Vertical Retorts. By James L. Hyslop 447
Dual System of Charging for Gas *v.* Electricity. By W. H. Roberts 449
Sulzer Process of Dry Coke-Cooling—A Profitable Plant at Work 451
Vertical Retort Installation at Barrhead . . 452
Central Heating by Gas—How it is being Popularized in France 453
India's Coal Problem and Low-Temperature Distillation. By Murray Stuart, D.Sc., Ph.D. 454
Gas Equipment in a Famous Hostelry . . 454
Coppée Coke Ovens for New South Wales—Details of the £1,000,000 Scheme . . . 455
Sand Blasting Mains *in Situ* 455

REGISTER OF PATENTS.

Burners for Lighting—Fry, A. E., and Lighting Trades, Ltd. 455
Breaking Coke—Pertwee, H. A., and Back, W. H. 455
Lighting Burners—Falkner, A. J. 456
Regulators for Gas Burners—Falkner, A. J. . 456
Applications for Patents 456

MISCELLANEOUS NEWS.

Brotherton & Co., Ltd.—Fiftieth Anniversary of Foundation 457
Kent Coking Plant—Illingworth Low-Temperature Carbonization Installation at Snowdown Colliery 457
Trade Notes 457
Coal Trade Reports—
North-East Coast 457
Yorkshire and Lancashire 457
Midlands 457
Contracts Open 457
Current Sales of Gas Products 458
Stock Market Report 459

PARAGRAPHS.

North British Association of Gas Managers—Eastern Counties Gas Managers' Association—Ceramic Society—Manchester District Junior Gas Association 444
Safety Control of Generator Charges . . . 451
Second International Conference on Bituminous Coal—Society of British Gas Industries 453
Continuous Coal Carbonization 456
Eastbourne Gas Company's Dividend . . 457
Safety First—Redhill Gas Company's Dividends—Chichester Gas Company—Shrewsbury Gas Light Company 458

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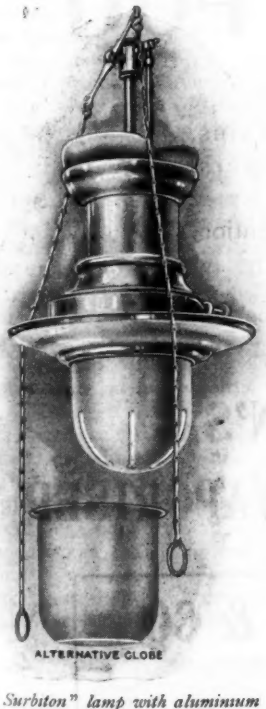

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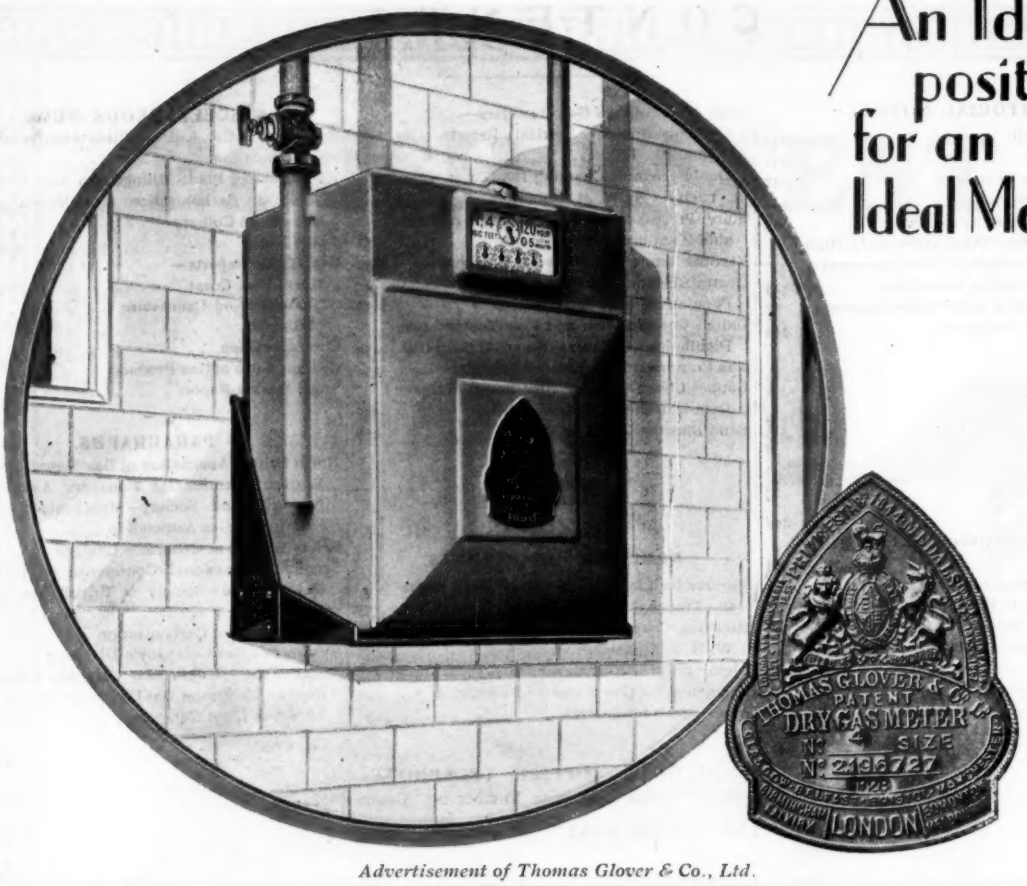

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